AMERICAN VETERINARY REVIEW.

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EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, April 15, 1912.

FOOT-AND-MOUTH DISEASE.—When in England an outbreak of that animal pest makes its appearance, or even when in the United States a similar event occurs, the measures to prevent its spreading, to limit its extent, to guard against its contagion, are readily put into force, sanitary regulations are immediately imposed, and the knacker is the master; all the dangerous animals—diseased, contaminated, exposed—are destroyed and their carcasses put in condition where no more harm can be looked for. That England and the United States can protect themselves afterwards by most careful watching, by most severe quarantine, is then comparatively a simple task.

On the Continent of Europe the state of affairs is different. The various countries almost form but one immense field, where at various intervals, here and there, the disease will appear and gradually spread from one to another by the many opportunities and various conditions of the distribution of the virus, and when it has affected such immense numbers of animals that their immediate slaughter would be probably not even the guardian of those which would have escaped, but would mean the complete ruin of the animal wealth of that country, what is to be done?

If this seems exaggerated, let us look only to the sanitary bulletins of some countries and judge. The records of several months back in England for foot-and-mouth disease is "none." The records for the month of December, 1911, in France were: 5,954 barns infected in 2,110 communes belonging to 85 departments. France is divided into 86 departments.

In the presence of such a state of affairs, with the almost impossibiity of preventing the disease from entering a country from the next one through the frontier, with the difficult application or the imperfection of sanitary measures, it is easy to appreciate why all imaginable curative treatments may become the order of the day.

The methods of treating animals with foot-and-mouth disease are numerous, and while some certain results may be obtained, and be good in some individuals, or be useless in others, after all, everyone fails in the important necessary object—the *arrest and extinction of the disease.* It would seem as if by law the treating of such animals ought not to be permitted, or at least ought to be so regulated that no danger, no spreading of the disease, could be possible. If such could be, the big charlatanistic advertising that we have been witnessing here of late or such booming means as the inhalation of iodoformed ether would not be allowed under the false pretext of saving the animal's life or arresting the contagion.

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The scientific journals on the Continent have been of late filled, more or less, with the present epizooty, but while many are either satisfied in recording the condition and the number of animals infected, or, again, publishing the new wonders proposed for treatment, others treat of facts which have greater importance and valuable interest, as they intend to throw light on that disease and possibly will give the key to the road which will make it better known, and may bring our bacteriologists to the discovery of proper means to give immunity.

In the German literature I read first an article from Prof.

Hoffmann on the prophylaxy of foot-and-mouth disease, where he insists, in the first place, upon the strict application of most severe sanitary measures, with also the improvements of the hygienic conditions of the animals, especially of those which would avoid the propagation of the buccal lesions to the digital extremities of the animal. For Hoffmann, the ungueal lesions are due to the flow of the virulent saliva along the fore legs, and he advises that means should be taken to collect this saliva, not to let it drop on the bedding of the animal, and also to protect the claws by the application of an antiseptic ointment. Of course, immediate slaughter is imperative. He considers that if the disease appears in an establishment, it is better to prevent its spreading rather than try to fight against it. But to do this he advises to use for the vaccination a saliva whose virulency has been reduced by heating or the addition of an antiseptic. By this a mild form of the disease could be obtained.

Going further, Hoffmann considers that the milk of the sick animals may prove a good preventive and curative agent if obtained aseptically, has its virulency reduced, and is injected aseptically in the peritoneal cavity. He claims to have obtained good results.

With the description of these prophylactic suggestions, Hoffmann has brought out a new form of treatment, which consists in using under the shape of an ointment or in suspension in water of an antiseptic known for some time, the *enguform*, a combination of formol or guaiacol. Local treatment consists in quinine and hot blankets. The results are reported as instantaneous, "Desiccation of the aphtæ, disappearance of the pains, return of the milk secretion." This treatment has nothing new; its principle remains on that of all the classical treatments known. *God* knows how many there are.

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If, after all, the question as treated by Hoffmann does not possess great value, except its actuality, that treated by Dr. L.

V. Betegh is more interesting. It relates to the etiology of the disease.

In his contribution, which I find *résuméd* in *Leclainche's Revue,* he first examines concisely the recent researches on the question, recalling the works of Loffler, Nocard and Roux on the filtrability of the virus. He reminds principally the fact that the virus does not go through a Kitasato's filter, a fact which may give points in relation to the size of the agent of aphtous fever.

Dr. L. V. Betegh has found, in the preparations of Terin, the eosinophile corpuscles which this author considered as the agents of the disease. Betegh had difficulties in finding analogous corpuscles, and those that he found he hesitates to consider as identical to those of Terin.

He has not found in the blood of sick animals the *Cytorrhyctes* that Sieged discovered and cultivated.

The investigations of Betegh rested on the following considerations: The virus exists principally in the aphtæ, as their contents diluted to 1-5,000 is still virulent. The agent of the disease is not ultra-microscopic, as it does not go through a Kitasato's filter, and that through this, colloids will pass whose granules are yet visible and measurable. Again, it seems very improbable that the smallest microbes should be smaller than the colloidal granules upon which they feed.

Betegh takes also exception on account of the facts that the microbes of pleuro-pneumonia, and Negri bodies of rabies, pass through filters, having forms which are visible with the microscope, as well as some trypanosomes are also, in an appropriated condition, able to pass through filters.

Examined with a dark room microscope (ultra-microscope), the lymph of aphtæ shows a large number of small, rounded, very mobile corpuscles. Those can be seen in the leucocytes, round the nucleus, in the periphery of the cells, and sometimes in the nucleus itself. These elements may be colored with the Giemsa, according to L. V. Betegh.

After coloration, these corpuscles seem to be formed of a

central part, lightly colored, surrounded by a peripheric zone scarcely tinted and forming a kind of sheath. These corpuscles are sometimes arranged by series of two. They present a kind of prolongation or flagellum.

According to L. V. Betegh, these are the specific agents of aphtous fever.

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Transmission of foot-and-mouth disease to human beings is generally admitted, and if direct inoculation has been successful, the reinoculation from man to bovine had never been realized. An Italian doctor, E. Bertarelli, is the first who realized the experiments of a reinoculation to bovine with aphtous virus taken from man, so records Panisset from the *Centralbl. f. Bakl.*

The disease prevailed amongst a large number of bovines. The disease was mild. Some people caught it. One man was inoculated in opening the mouth of sick animals. He had a few days later cephalalgy, soreness all over, painful sensation in the tongue and palate, and an eruption of small, white, grayish spots over the tongue. He recovered quickly.

A child was then sick also, but recovered after fifteen days' ailment.

Were these true cases of aphtous contagion? Bertarelli inserted in the ear of a calf a little thread humected with the saliva of the first man and inoculated some of the saliva also in the upper lip of a calf. Five days later a typical aphtæ developed on the lip, and on the ear came a swelling with a little ulcerated sore, similar to the manifestations obtained when the experiment is made with the saliva of an aphtous bovine—which, by the way, is sometimes resorted to as a means of vaccination.

For the author, this single experiment shows the possible transmission from bovine to man and vice versa, from inoculated man to bovine.

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DETERMINATION OF SEXES.—To answer more thoroughly, at least as far as I could, to an inquiry of one of my correspond-

ents, I alluded lately a report relating to the influence of adrenaline in the solution of this problem of origin of sexes, which has already given rise to so many researches and been the object of a long enumeration of the solutions proposed. In the *Presse Medicale,* one of my favorites for good information, I have come across the analysis of the researches instituted since 1871 by Prof. T. Ciesielski (from Leopold), in which the discovery of the *immutable law of nature* according to which males and females are formed, is laid out.

The experiments of Ciesielski were first made with plants, on hemp, which, as every one knows, is a dioecious plant. He first controlled the popular sayings according to which hemp, sown thick, would give more male stalks than if it was sown thin; or, again, according to which the seeds would give a different sex by following the periods of moon changes. The results were negative.

During five years Ciesielski varied his experiments; they all failed, thus showing that the determination of the sexes did not depend on external influences upon the development of the seed. It is at the moment of the fecundation that the determination of the sex is influenced. New experiments were made and final conclusive results obtained.

In land of his own, Ciesielski sowed, in three different places, three fields of hemp; as soon as on the plants the sex was manifested, he removed from two of the fields all the male plants and had the third one surrounded with fences, leaving in it only the male plants. Then he himself applied artificial fecundation of the female plants with pollen taken from the males, with this difference, however: that the fecundation was in one part of the field done only in the morning at sun rising, and in another in the evening after sunset. Gathering the grains from these two fields, he sowed them the following year. Those which came from the plants fecundated at sun rising gave 85.6 per cent. of male plants; the others, on the contrary, 92 per cent. of females.

Carrying the experiments further, female plants were put in pots and placed in the different rooms. On these a different

artificial fecundation was performed. Three pots of one room were fecundated with pollen taken from the stamina, bursted but not widely open (recent or fresh pollen). The pots of the other room were fecundated with pollen gathered in the morning and kept until midday in paper. From the three first pots 120 grains were obtained and 96 only from the others. Sown the following year, the 120 seeds gave 112 plants with only 6 females; the 96 seeds gave 89, all females.

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After having obtained such results with plants, animals were taken for experiments.

Rabbits.—A black female was covered by a white male, the same day by a gray male, and the next day after 18 hours by the first white male. The doe rabbit had a litter of five little ones, four females and one male. One white and one white and black female came from the first coit with the white rabbit, one black and one gray with black spots came from the gray rabbit, and one white male with black spots was from the second coit with the white rabbit.

Dogs.—A white female was covered successively by a reddish male and then the same day by a white one. The following day, about 19 hours after, she again received the reddish male. She had three pups, one red female, one white and one male, spotted.

Therefore, in general, after a single connection with a rabbit, abstemious, which has had no coit since a few days, a doe will give birth to two or three females; and if the rabbit has performed coit the day before, on the contrary two or three males will be born. Likewise in dogs, a single coit gives ordinarily one or two females, if the slut has been fecundated by a dog that has not coited since several days; or, again, one or two males if the dog has covered another slut the day before.

This has also been proved by Ciesielski in horses and with bulls. Looking into the registers of Mikolaow-Drohowyze

breeding establishment, he has noticed that, covered by a stallion which had not mounted any since several days before, the mares had only female products, while, on the contrary, mares covered by a stallion which had done service the day before gave birth to males.

Having bought a bull and lending him to county people, it was observed that the products given by this bull, out of 156 cows that he covered in two years, there were but two exceptions to the rule.

And, says Ciesielski, "I add that since thirty-three years, I have often had the possibility of experimenting this law in man, by giving to many relations, friends and even strangers disinterested advices, whose essential object I did not reveal, but which I seemed to attach much importance. In all the cases where these advices were exactly followed, the result has always been what was expected."

Conclusions: The sexual differentiation takes place at the time of fecundation in plants, in animals and in man, and it takes place according to one single law, viz.: *Fecundating elements (pollen or spermatozoids), fresh, not more than twenty-four hours, give products of male sex; those elements more than twenty-four hours old promote the formation of female sex.*

If this theory and this law are correct, breeders can derive great advantage according to their desires.

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BIBLIOGRAPHY.—*"Parasitologie des Animaux Domestiques"* (Parasitology of Domestic Animals), by Dr. Maurice Neveu-Lemaire, Professor at the Faculty of Medicine, Member of the Society of Veterinary Sciences of Lyon (Rhone).

There are few sciences which have in late years made as extensive and rapid progresses as that of parasitology, and the publications that relate to it are day by day more numerous. The important studies and the new discoveries that have been made

in the last fifteen years have completely transformed the etiology and the pathogeny of many of the affections of man and animals.

The author was among the first to gather together the facts which related to parasites of men, and the success that his first work received has induced him to publish the present book, where the *non-bacterian parasitic diseases* of animals with their parasites are considered.

The usefulness of such work cannot be contested. The writings concerning the parasitology of domestic animals are spread in isolated publications which treat of this special subject, or in periodicals more or less read. To collect all those documents together, to arrange them and study them with a clear and precise method, was indispensable, and it is with that object in view that Prof. Neveu-Lemaire has written this work which, no doubt, is going to be of immense advantage to professional parasitologists and naturalists but also and principally to veterinarians; students and practitioners will consult it with great interest, and it will soon find its way into the library of all those who wish to be well posted in parasitology of domestic animals.

The plan of the work is simple. The first part treats of vegetable parasites, the second of animal. In each part the various parasites are studied, as much as possible in their botanical or their zoological order, and after the description of each one its pathogenous action is indicated.

At the end of the principal paragraphs there is exposed, in a concise manner, the simplest methods which will permit the practitioner to make, with his microscope and a few reacting agents, the parasitologic diagnosis. Finally the book ends with the list of the domestic animals and their parasites, arranged according to the various organs where they are found.

Illustrated with 770 plates, this book covers over 1,200 pages of easily read matter, well printed and forming a handsome volume whose contents are divided into four chapters: 1. Pathogenous fungi and mycosis. 2. Pathogenous protozoa and protozoosis. 3. Parasite worms and helminthiasis. 4. Anthropod parasites, scabs and insects. The book costs 16 francs and can

be had from J. Lamarre & Co., Editeurs, 4, Rue Antoine-Dubois, Paris, France.

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"*Internal Pathology—Mediastinean, Heart, Blood Vessels, Blood*" (Pathologie Interne, Mediastin, Coeur, Vaisseaux Sang), by Prof. Cadeac.

It is about one year since we had the opportunity to call attention to a new volume of the second edition of this part of the Veterinary Encyclopedia of the learned Professor of Lyon. The fifth volume that is before us is a continuation of the work. With the conclusion of the thoracic organs, it presents to the reader the diseases of the heart, of the blood vessels, and begins those of the blood proper. The consideration of the circulatory apparatus includes the varieties of pericarditis in the first chapter. In the second the myocarditis, hypertrophy, cardiac dilatation, fatty degeneration, angina pectoris, rupture, tumors and parasites. The third chapter treats of endocarditis in its various forms. The fourth chapter covers the arteritis, the aneurisms, and the many forms of thromboses. Splenomegaly, with hemorrhages of the spleen, abscesses, necrosis, and tumors occupy a special chapter.

The book is presented by the house of J. B. Bailliere & Sons, and with its numerous illustrations continues the gigantic work undertaken by Prof. Cadeac, who, we understand, is hard at work to complete the publication of this second edition.

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ACKNOWLEDGMENTS.—*Cornell Veterinarian*, No. 1, No. 2.

The *Daily Picayune* of New Orleans, with the excellent biography of Dr. Dalrymple, by Dr. D. Arthur Hughes, extracted from the *Veterinary Journal* of London.

The "Proceedings of the American Veterinary Medical Association" (Meetings of 1911). The "Papers and Proceedings of the New York State Veterinary Medical Society"; handsome little pamphlet of 130 pages where the 21st annual meeting is recorded.

"Results Obtained in the Eradication of Tuberculosis by the Use of Tuberc. Vaccine and Bang System," by S. H. Gilliland, V.M.D., M.D.

"Report of the Fifteenth Annual Meeting of the United States Live Stock Sanitary Association," a pamphlet where in few pages the great amount of work done at the meeting is condensed, and which I have been pleased to notice in my preceding Chronicle.

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SPECIAL ADDENDA.—I was in hopes that the program of the celebration of the 150th anniversary of the foundation of the first veterinary school at Lyon would be issued before this, but, notwithstanding all my inquiries, all I can gather is that it will take place in the very first days of June. The celebration, I am told, promises to be a great success, and the inauguration of the monument erected to Prof. Arloing will be witnessed by many. The subscription list has been very successful, and among the donators I find those of many American institutions, the American Veterinary Medical Association, the AMERICAN VETERINARY REVIEW, the veterinary medical associations of New York City, of New York State, of Schuylkill Valley, of Massachusetts, of Colorado, of Missouri Valley, of Washington State College, and others, all of which have been acknowledged by the committee. The Veterinary Museum organized by Colonel Aureggio will also be a very great attraction at the celebration.

A. L.

THE FIGHT FOR THE ARMY VETERINARY BILL IS NOW IN THE SENATE.

The battle for the passage of the Army Veterinary Bill is now half won. We are in the thickest and hottest part of the fight. Consequently, now is the time when we must avail ourselves of every resource until the musketry and cannonading are over and we find ourselves victors. But mark you, we are in the roughest,

toughest, most straining part of the terrific fight and we have the worst part of the work yet to do.

The facts are these: The bill "to consolidate the veterinary service, United States Army, and increase its efficiency," H. R. 16843, as a result of frequent conferences between the War Department, the House Committee on Military Affairs and our professional representatives, in recast, modified form, was favorably reported out of the committee of the Lower House April 26. That Committee says, in its transmittal. "Your committee, after giving the bill very careful consideration, is of the opinion that it should pass in the interest of the efficiency of the service." In closing the printed document transmitting the recast bill to the floor of the House of Representatives, the Military Committee said: "It is thought that it will greatly improve the service to give the rank provided for in this bill, and in that way much money will be saved by virtue of increased efficiency in this service. *The veterinary surgeons of this country are a body of highly trained, intelligent men who have made and are making great strides towards progress in their profession, and it is not reasonable to expect that the Government can secure the best talent of the profession unless some fitting and substantial recognition is given it.*" That is just what we are fighting for—recognition in the army as a profession. The final statement of the Committee is a frank admission of our contention that, in the War Department, our brothers have no recognition at present as professional men.

In this issue of the REVIEW, under the "Army Veterinary Department," we print H. R. 16,843, as recast by the Military Committee, together with cogent remarks on the main changes made in the bill as introduced in January by Mr. Difenderfer, of Pennsylvania. No repetition of that matter is needed here. However, the members of the profession throughout the country should know: (1) That if the bill should pass, even in its modified form approved by the Military Committee of the House, we will at last have won, after nearly half a century of warfare, recognition as a profession in the army; (2) our men will be

commissioned officers with rank equal to that of the dentists, whose bill passed a year ago, namely, first and second lieutenancies; (3) the stigma at present marring our profession in the army will be removed, and snubbing of our members, in and out of the army, because of it will be stopped.

The bill has very bright prospects of passing the House: first, because of its favorable recommendation by the Military Committee; second, because the Committee on Legislation of the American Veterinary Medical Association reports that a sufficient number of Congressmen in all states of the Union have pledged themselves to their constituencies to vote for the bill, which should ensure its passage by that body. But its prospects in the Senate are an unknown quantity, though certainly far from bright. The bill in the Senate, S. 5792, similar to the House bill, has been turned over by the Senate Military Committee to a sub-committee, consisting of Senators Bristow of Kansas, Jones of Washington and Clark of Arkansas. It is of the utmost importance that the profession in those states should exert itself to win, first of all, those Senators for the bill. The securing of the sub-committee will persuade the Senate Military Committee to favorably report the bill to the Senate. The Senate Military Committee consists of Dupont of Delaware (Chairman), Warren of Wyoming, Dixon of Montana, Briggs of New Jersey, Brown of Nebraska, Guggenheim of Colorado, Bristow of Kansas, Jones of Washington, Lorimer of Illinois, Foster of Louisiana, Johnson of Alabama, Clark of Arkansas, Taylor of Tennessee, Chamberlain of Oregon, Hitchcock of Nebraska, Williams of Mississippi. On these men our heaviest artillery should be trained. If we win them, we win the bill. The stain of distrust, the blockade of our progress in the army, the ironclad restraint which has hitherto been placed upon us in military circles, will be removed. We will banish forever the opinions held in the army that the veterinarian is nothing and deserves nothing. We must battle our way through the sub-committee of the Senate; then the Senate Military Committee and the Senate itself. The goal is in sight. Push; press hard; struggle along and we will win.

OUR FEDERAL MEAT INSPECTION SERVICE.

Newspaper columns throughout the country have recently been filled with articles in reference to the necessity for an investigation of our federal meat inspection service; brought about, it is said, through criticisms made by Mrs. Caroline Bartlett Crane, and by Dr. Albert Leffiingwell in his book, "American Meat," published in England, in 1910. Chief Melvin's explanation of the sane translation of the federal meat inspection law, and its practical application on the floor of the abattoir, as given in a recent public statement, is reproduced on page 374 of this issue of the REVIEW, lest any of our readers have not seen a copy of it. It does seem presumptuous to criticise a system of meat inspection that has been based on the judgment of eminent scientists and conceded to be the best in the world, or to question the integrity of the officials administering the service, and the REVIEW awaits with confidence the outcome of such an investigation.

PRESIDENT BRENTON VISITS THE CONVENTION CITY.

Returning from a recent visit to Indianapolis, President Brenton, of the A. V. M. A., reports that the local committee are preparing for the largest gathering that the national organization has ever had. The "Claypool Hotel" (A. V. M. A. Headquarters), impresses President Brenton as being very like the Sherman House in Chicago. That being so, those stopping at headquarters will have excellent accommodations. "Das Deutsche Haus," where the sessions are to be held, is but a few blocks from hotel headquarters, a condition which will add much to the convenience and comfort of those in attendance. Its main hall has a seating capacity of 1,600, with excellent acoustic conditions. There are two other rooms with seating capacity of from 250 to 350 each, which will serve nicely for section work. There are also several committee rooms, and rooms suitable for exhibits. These conveniences, with a good cafe in connection

where excellent meals are served, presents an ideal meeting-place to look forward to. Clinics can be arranged for to good advantage at the veterinary college amphitheatre, and a hearty welcome awaits the attendants of the A. V. M. A. meeting at Indianapolis, and the ladies will be well looked after.

IN MEMORIAM—LEONARD PEARSON.—This is the title of a clearly printed, neatly bound little volume from the Lippincott press, bearing as a frontispiece a striking likeness of the late Leonard Pearson, and containing, in addition to a biographical sketch of his life and eight addresses in connection with the memorial exercises, forty-seven tributes to his name from great men all over the world, from veterinary journals and from scientific and veterinary organizations. It was a happy thought that prompted the grouping together of all these expressions of appreciation of the greatness, the nobility and worthiness of this gentle, unassuming American veterinarian in one volume; a volume that will be cherished by the present generation of veterinarians and handed down to future generations tenderly and reverently.

DISCUSSION OF BREEDING PROBLEMS OPENED.—In our May issue we referred editorially to the advantages to veterinarians to be gained by a careful study of breeding problems, offering the pages of the REVIEW for their discussion by the veterinary profession and promising to have the subject opened by Prof. L. L. Lewis, of the Oklahoma Agricultural Experiment Station. Prof. Lewis' paper, entitled "Artificial Insemination," appears on page 278 of this issue and will prove interesting and instructive reading. A series of papers on breeding problems will follow in subsequent issues.

DR. JOHN F. PLANZ, of Akron, Ohio, has accepted the position in veterinary surgery and obstetrics made vacant by the resignation of Dr. J. H. McNeil at the College of Veterinary Medicine, Ohio State University.

ORIGINAL ARTICLES.

ARTIFICIAL INSEMINATION.*

By Prof. L. L. Lewis, Veterinarian and Bacteriologist to Oklahoma Agricultural Experiment Station, Stillwater, Oklahoma.

The veterinarian should never neglect the scientific and technical side of his profession. Yet, we wonder if the profession does not now rightfully include more than was included in the college curriculum of a few years ago. There certainly is no one better fitted by training to undertake general studies in animal husbandry than the veterinarian, and his field of usefulness to the agricultural interests should include every phase of animal husbandry, as well as the treatment of animal diseases. If the veterinarian will only identify himself with the questions relating to animal breeding he will not only increase his usefulness to his clients, but will find a field that is entirely worthy of his efforts from a scientific standpoint.

It should not be presumed that our knowledge of the physiology of reproduction is complete, although there is a great mass of reliable data available. Logically, a study of animal breeding begins with a study of the reproductive organs and cells, the conditions influencing the production of these cells, and the factors determining their vitality. Many of the problems of animal breeding have been treated as if there was nothing to be learned, or else nothing to be gained in a practical way by scientific investigation and study. Animal breeding involves more than the proper selection of sires and dams. Stock breeding should be placed on a scientific basis, and there are

great numbers of stockmen ready to avail themselves of service in this connection.

One of the questions of prime importance is the study of the vitality of the sperm cell, as well as the effect of continuous service on the number and vitality of these cells. Since some breeders have been using artificial means of introducing the sperm cells into the organs of the female, the question of vitality is of interest in order to determine if there are apparent reasons why the practice should or should not be successful. A study of the vitality of the sperm cell from the horse gives one good reasons to expect that the semen can be successfully transferred by instruments to mares that are ready to breed. By collecting semen from the vagina, or from a breeding bag, and making microscopic examinations at intervals, it will be found that the sperm cells will show movement for from four to eight hours, depending upon the conditions under which the semen is kept. Semen from a vigorous horse shows apparently but little change for two or three hours after it is collected. This being true, it would seem that a successful transfer of semen could be made into the organs of animals to be bred when not more than five minutes of time is necessary for the work. The sperm cell is exceedingly sensitive to the presence of any chemicals, so that cleanliness becomes an important factor in this work. The syringe, of whatever pattern used, should be kept clean. The use of a breeding bag for collecting the semen is unnecessary, as the semen may be collected by instrument, either from vagina or womb. However, if the stallion or Jack does not object to serving with the breeding bag its use makes the work easier, as the semen is in a convenient receptacle, and unmixed with any of the vaginal secretions of the mare.

There is no doubt but that there have been too many extravagant claims made regarding the success of artificial insemination, the length of time the sperm cells will live under artificial conditions, and the great distances it has been transferred and then used successfully. Some of these exaggerated statements are enough to make one having any knowledge of biology dis-

credit them without further question, but over enthusiastic statements should not prejudice one against the study of the general question. Many breeders are successfully using artificial means of introducing the semen. The process is commonly called artificial impregnation, but a better term would be artificial insemination. The mere fact that the semen can be transferred successfully by means of instruments has no value except as a matter of scientific interest unless there are practical reasons for attempting the work. A brief mention of the practical side of the question is of interest.

The number of sperm cells present in the semen of a vigorous stallion will vary from one hundred and fifty thousand to two hundred and fifty thousand per cubic millimeter, and the semen from one service may vary from fifty to one hundred cubic centimeters. There may be as many as twenty-five billion of sperm cells present in the semen from one service. Since only one service of the cells is necessary for fertilizing the ovum, there is no reason, so far as numbers of spermatozoa is concerned, why a few cubic centimeters of the semen introduced by capsule or syringe would not serve the same purpose as direct service.

Perhaps the point of greatest interest is the effect of continuous service on the number and vitality of the sperm cells. In one set of observations along this line the number of spermatozoa present at the beginning of the experiment was 131,000 per cubic millimeter, with a vitality extending over nine hours. At the end of nine days, one service daily, the number of sperm cells per cubic millimeter was 5,800, and vitality continued for three hours. The horse used was a heavy, sluggish draft stallion. In another set of observations, where a vigorous young grade stallion was used, two services were given daily from December 14 to December 24, inclusive. The normal condition of semen for this horse showed about 200,000 sperm cells per cubic millimeter, and vitality of from eight to nine hours. A sample of the semen secured from the twentieth service showed 23,000 sperm cells per cubic millimeter, with a vitality of not more than one and one-half hours.

Where the per cent. of foals obtained under the best of conditions is not high there should be no surprise when this number falls to a very low point, as compared with the number of services given when the stallion is bred too frequently. By giving fewer services the vigor of the sire may be kept at the highest degree of perfection, and by the careful transfer of semen possessing cells of high vitality the number of foals secured will be much greater than by the direct service method, where one and two services are given daily. However, many failures will result, whatever method is used to introduce the fertilizing element, but with fewer services for the sire and more attention given to the dam in such matters of better feed and care, and less fatiguing work, there can be no doubt of the results being more satisfactory than they are at present.

HORSE CENSUS.—According to a recent census, we have in the United States, 23,778,481 horses. The number compares with other countries as follows: Canada, 2,303,725; Central America, 27,873,328; South America, 9,155,425; Austro-Hungary, 4,196,634; European Russia, 23,548,000; United Kingdom, 2,253,418. Total of Europe, 43,502,876. There has been an increase of 15,108,000 horses on the farms in the United States during the past forty-five years, and an increase in valuation during that period of $1,853,770. This immense increase in valuation is, of course, not wholly due to the increase in numbers, as the average valuation per head has advanced during that period from $59.05 to $105.94, the total farm value of the 20,509,000 horses on the farms in the United States being $2,172,694,000 on January 1, 1912. There are over 1,000,000 horses on the farms of each of the following States: Iowa, Missouri, Nebraska, Kansas and Texas; and New York State has upon its farms 609,000 horses, more than that of any other North Atlantic State. The progress in this immense industry is reported as generally favorable throughout the country at the present time and veterinarians are urged to concentrate their thoughts in an endeavor to evolve plans of economy that will tend to further its progress.

BIOLOGICAL PRODUCTS.*

By Charles H. Higgins, D.V.S., F.R.M.S., Pathologist, Department of Agriculture, Ottawa, Can.

The title of my paper confronts us with a large variety of preparations, some of which have secured an enviable reputation in the diagnosis, prevention and treatment of disease; many are undergoing the evolutionary period, a few of which will eventually be discarded, while others have been wholly unable to survive the vicissitudes of either practical or theoretical experimentation.

It is not my purpose to mention individual products and indicate the results, beneficial or otherwise, following their use in the diagnosis, prevention or treatment of diseased conditions. My effort, however, will be directed to the consideration of certain of the more important problems associated with their history and manufacture. The special indications for their use, the methods of application, dosage, and the results obtained therefrom naturally belong to the clinician, although their origin and the technicalities surrounding their preparation are usually the result of detailed laboratory study.

I desire to premise my remarks by the statement that the development of my theme will be from the very broad standpoint of preventive medicine as related to public health problems, and, will in a general way include all biological products, whether the minor details refer to the more restricted acceptation of the term as embracing comparative or human medicine. We cannot separate these products into distinct classes, the one for animals and another for man, as both men and animals have benefited greatly from their preparation, and both are also interdependent for their very existence. The problems in dealing

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with diseased conditions in either case are based on the same general principles and infectious disorders occurring in both are treated similarly.

Biological products as we now interpret the term are preparations designed for the diagnosis, prevention and treatment of diseased conditions in men and animals caused by specific infectious agents or poisons. They include normal sera, antitoxic sera, antibacterial, sera, toxines, attenuated vira and bacterial vaccines.

To enumerate all of the products which are to-day available would require much more time than is at our command and it is further questionable whether such a course would be of interest to members of this section, all of whom are more or less familiar with the more important of those in common use. We are, however, directly concerned with their evolution, and the desired laboratory requirements for their manufacture and subsequent testing are details of vital importance in the consideration of the broader aspects of their relationship to public health problems.

The development of any new field of science is largely dependent upon the individuality of the workers and the problems with which they are forced to contend. The developments in the preparation of biological products offer no exception to this general rule. Leaving out of consideration the introduction of small-pox vaccine by Jenner, their history is inseparable from the advances of bacteriological knowledge, and this knowledge is in turn associated with the improvements made in the grinding of microscopic lenses and the mechanical construction of compound microscopes.

Pollender in 1849 and Davaine in 1850 expressed the opinion that anthrax in animals was closely related to the presence of what they termed sticks and rods in the blood from cases of this disease. It was, therefore, but a step to the definite proof by Koch in 1875, when he described the morphology of the organism, that these bodies were the cause of this disease.

Pasteur, experimenting with chicken cholera in 1880, found

that the causative organism could be cultivated in a specially prepared chicken broth. Returning to his laboratory after an absence of a few days, he observed that cultures made prior to his departure no longer produced the disease in susceptible fowl. Securing a fresh organism from another outbreak, he found that the fowls previously inoculated did not contract the disease, although susceptible fowl not so inoculated became affected and died in the usual period. He was thus able to demonstrate, largely by accident, that cultures of the bacteria responsible for the ravages caused by this disease could be attenuated and that such attenuated cultures were capable of establishing resistance or immunity in susceptible animals when used in suitable doses. Applying this knowledge to anthrax, he was able, in 1881, to prepare an attenuated virus which conferred immunity against this affection. Anthrax vaccine is now a commonly used biological product, although there is danger, and serious losses have been reported following the use of an improperly prepared or impotent product. In connection with these attenuated vira it is of interest to note that investigators have shown that the inoculation with an organism usually harmless, may be capable of conferring a passive immunity against a disease. For example, the Bacillus pyocyaneus confers immunity in sheep against anthrax for a limited period.

From this groundwork on immunity and the constant increase in our bacteriological knowledge we have witnessed the introduction and extensive use of bacterial filtrates. Some of these such as tuberculin, introduced by Koch, and mallein, introduced by Von Preusse and Kalning, are well known diagnostic agents and are often improperly called toxines. With the preparation of the bacterial filtrates just mentioned, which we now know to be thermo-stable, further experiments indicated the development of true toxines such as diphtheria and tetanus which are not thermo-stable. The unheated sterile filtrates from these latter organisms were found to be fatal in extremely minute quantities when injected beneath the skin of suitable experimental animals. With the knowledge that recovery from an attack of

diphtheria conferred an immunity against a subsequent attack, it was considered that the introduction of the toxine into the body of an animal in non-fatal doses would cause the formation of a neutralizing substance or anti-toxine and that this in turn would be capable of destroying the poisonous effect of the toxine. This theory was sound and Von Behring prepared an anti-toxic serum from dogs and sheep. Aronsohn used goats and later Roux employed horses. While the use of the smaller animals established the general principle of the formation of an anti-toxic substance in the blood of a treated animal, the expense involved in the preparation of this serum would almost prohibit its general application if necessity required the use of the smaller animals. We may, therefore, consider that while Von Behring was the originator of the method we must credit Roux, a pupil of Pasteur, with the practical solution of the means by which an adequate amount of serum could be secured to meet the demands for controlling diphtheria in the human.

Anti-bacterial and anti-toxic sera are prepared by inducing a high degree of immunity in the larger animals against the disease for which the anti-bacterial or anti-toxic sera are desired. The horse being a very tractable animal has proven the most satisfactory and is the one most frequently used. The horse was selected as a large amount of serum is available once the immunizing process has reached a satisfactory point. Great care, however, must be exercised in the selection and subsequent care of the animals required for experiment. Even with the most painstaking care one is not sure of securing a subject, the serum from which after the requisite treatment will show a satisfactory degree of potency. In some instances as many as an average of six horses are required to obtain one giving a satisfactory serum. When horses are immunized in the preparation of anti-plague serum, even a greater number may be required.

The anti-bacterial and anti-toxic sera are now well and favorably known, having demonstrated their efficiency in preventing and controlling losses from the diseases for which they are prepared.

With the preparation of these sera as with the preparation of any new medicinal agent it was but natural that some means of standardization should be sought. The studies of Ehrlich and the elaboration of his side chain theory explained the chemical reactions involved in the process and he was first to take the necessary steps toward the standardization of anti-diphtheretic serum. Rosenau and Anderson in endeavoring to establish a unit on which they could always depend have given us an elaborate process for accomplishing this end. They found that in the dry state serum would retain a certain strength for an almost indefinite period if kept in a vacuum and at a constant temperature. It is their standard unit which is now used for the guidance of manufacturers in the United States and a suitable amount is supplied for the use of each at certain stated periods. Their method of testing requires accurately graduated glassware, a standard toxine which must be made by growing a suitable strain of the diphtheria organism on a special liquid medium. and an adequate supply of guinea pigs of 250 grammes in weight.

I may here mention that the details which must be observed when manufacturing any of the biological products requiring the use of large cultures are very exacting. We must not only have a pure culture of the organism and a suitable medium, but we must have a strain capable of rapid growth on the surface of a liquid medium. All strains do not possess this feature. For some purposes solid media may be used, but for routine work we must accustom any given organism with which we may be working to the artificial conditions necessary for our particular requirements. The strongest diphtheria toxine producer is not necessarily the most virulent culture, nor are we able to produce a satisfactory mallein or tuberculin from the most virulent strains of their corresponding organisms. Detailed experiments must be carried out with a large number of strains before we can hope to secure one suitable for the production of the large amounts of chemical by-products required in a limited amount of time.

Many curious phenomena are observed in growing large cultures for any of these purposes. One of the most annoying is the ease with which large cultures of certain bacteria become contaminated while very crude bacteriological technique will suffice in preventing contamination where other organisms are used. In the preparation of tuberculin, contaminations are rare while the opposite is true when dealing with *Bacillus mallei* in the preparation of mallein. Large cultures of diphtheria are also contaminated with organisms which seldom or never appear in other special or routine work where the same incubating chamber is used. These occurrences are difficult to explain. I have considered that the aroma coming from a large culture has an important bearing on this feature. All bacteriologists are familiar with the odor coming from cultures commonly seen in any laboratory and we similarly have distinct characteristic odors given off from cultures of *Bacillus mallei, Bacillus diphtheriæ,* bacillus tuberculosis and others. So important are these odors that a laboratory worker with a delicate olfactory organ can distinguish a pure from an impure culture. Under such conditions, where we have no diagnostic method of staining I consider the microscope examination a confirmatory procedure and not a primary factor. I am further of the opinion that the aroma has a direct relationship to the efficacy of any of these bacterial products.

Normal sera, or the sera from a normal or untreated animal may be used with more or less benefit in diseased conditions which are but slightly or wholly non-infective to the animal from which they are taken, such as normal horse serum for tuberculosis. Normal bovine serum has been used with a certain degree of success in a few cases of human glanders and is worthy of further trial. Normal sera from other animals such as goats, hogs, dogs, etc., will doubtless be used just as soon as a pioneer therapeutist has the courage to determine their value in suitable cases and an individual versed in the technique of preparing the serum join forces. While the occasions for the use of normal sera are naturally somewhat limited, they are deserving of more attention than they have heretofore received.

Killed cultures of bacteria, now known as bacterial vaccines have occupied a very important place among biological products for many years. None of these have received greater attention than that known as Haffkine's prophylactic consisting of the killed cultures of bubonic plague. The bacterial vaccine receiving the most attention at the present time is the anti-typhoid vaccine, the efficacy of which as a prophylactic is well established from the numerous statistics available.

With the further development of bacterial vaccines we have, from a bacteriological standpoint, an extensive field opened before us. These products require great skill in their preparation if they are autogenous in character and properly standardized. In a large measure their success depends, as with other products, upon the individual skill of the producer. All who are trained in the art and science of medicine do not make good clinicians, nor do they become equally proficient in the various specialties. Likewise, all pathologists do not acquire an equal proficiency in the preparation of these vaccines. The results are largely dependent on individual idiosyncrasies and judgment. The combined or polyvalent vaccines appear to be the most promising and will undoubtedly be the ones receiving the most general use. They have the advantage of being prepared from several strains of the same organism and are intended for use in those conditions where the infecting agent is similar to the types from which they are manufactured.

With respect to the necessary facilities required for the preparation of biological products, I will add but a few words. The buildings need not be expensive nor elaborately equipped. They should be spacious, well lighted, well ventilated and provide plenty of room for the laboratory workers and the animals required in the conduct of the work. The details must be considered individually in each instance, according to the work to be undertaken. All laboratory workers have a certain pride in their surroundings and it is to be expected, considering the risks constantly taken while working with large cultures of the most virulent infectious agents in the preparation of biological

products that we should desire to safeguard our own existence in every possible manner. In no line of endeavor is the accidental hazard so great. This feature should be considered in the construction and equipment of buildings for the purpose.

You are aware that a biological product prepared by a certain manufacturer always gives uniform results and is seldom or never followed by after effects of a serious or annoying nature. When this particular product is for any reason unavailable, and a substitute is used in its stead, less favorable results follow and serious after effects may occur. The repeated occurrence of similar difficulties may be anticipated until it becomes the business of some properly constituted authority to examine all such products manufactured or offered for sale in Canada. The manufacture of the products now used in Canada provide a source of revenue to individuals and companies, and, therefore, the potency is to a very large degree dependent upon the integrity of these individuals or companies. On the whole the integrity displayed has been of a very commendable order, although we are aware that the trade relations of this country were seriously jeopardized a few years ago by an outbreak of foot-and-mouth disease in the country to the south of us which was finally attributed to the use of a contaminated virus in the preparation of small-pox vaccine.

At the present time, the biological products available for use in Canada, with a very few exceptions, are imported, and there are at present no restrictions exercised over the facilities provided for use in connection with their manufacture, nor is any standard established to which they must conform before being offered for sale. As a laboratory worker with an intimate knowledge and an extended experience in the manufacture of certain biological preparations I am convinced that there should be some restrictions placed, not only on their sale, but on the safety of the surroundings and the conditions maintained during their manufacture.

Will meet you at Indianapolis, August 26-27-28-29-30.

RINDERPEST AS OBSERVED IN THE PHILIPPINES.

By Walter Sorrell, D.V.S., Formerly Veterinarian Serum Lab., Manila, and Fred C. Cater, D.V.S., Formerly Veterinarian, Dept. Agr., Manila, P. I.

The first record of the outbreak of rinderpest in the Philippine Islands was during 1882, when the Spanish authorities took cognizance of and issued a bulletin on the same, while ancient literature shows the disease to have existed in the steppes of Oriental Europe and Central Asia since the most remote periods. In the fourth century of our area the disease was introduced into Western Europe by immigration from the former territories and owing to the incessant wars of that period was spread to almost every country in Europe. During the last half of the eighteenth century Germany alone lost thirty million cattle and the whole of Europe two hundred million bovines from this scourge. The disease was probably introduced in the Philippines from China, and since the time of 1882 has remained endemic in the alluvial soils and damp, partially inundated coast lines. The chaotic condition in animal diseases that prevailed to confront veterinarians in the archipelago following occupation and subsequent establishment of civic government was an almost insurmountable situation, but with careful procedure no grave errors were made, which is a mute testimony to the adaptability of the American to adverse conditions.

Definition.—Rinderpest is a specific, malignant and highly contagious and infectious disease, characterized by a peculiar form of inflammation of the mucous membranes, more particularly of the digestive tract. It is spread by direct or indirect contact between sick and normal animals, the infection being carried only a limited distance through the air; birds, water streams, human attendants to sick animals, boats used for animal transportation, small animals, and even forage stored near affected animals and later fed to normal ones, all act as conveying agen-

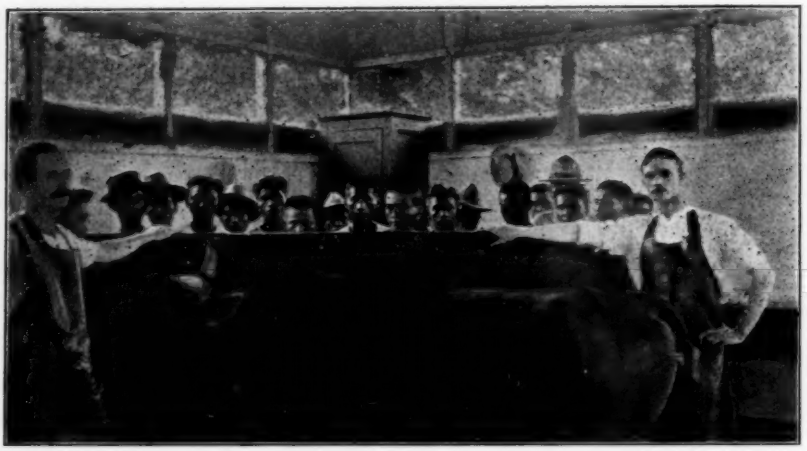
cies. It is essentially a bovine malady, though it may be communicated to sheep, goats, deer, antelope, camel and other smaller animals. The period of incubation runs from three to ten days; by inoculation, two and a half to four days, varying owing to the virulency and quantity of the inoculating media; natural infection usually requires from four to seven days.

Symptoms.—There is at first a rise of temperature, which is above that brought on by labor, generally on the third or fourth day in the inoculation and the fifth or sixth day in natural infection cases. In 1865 Professor Sanderson proved that

No. 1. Flyproof operating room and force at San Lazero Hospital grounds for bleeding serum animals.

in this period the blood of the infected animal was capable of producing the disease if inoculated into a susceptible animal; this was later confirmed by Koch, but the latter thought such an animal was incapable of communicating the disease to a healthy one until the visible symptoms developed. The temperature rises to 40° or 41° centigrade, somtimes even 42°, and there may or may not be any accompanying congestion of the conjunctiva, but it follows in all cases in from a few to twenty-four hours; the congestion is extreme, causing the conjunctiva to have a tumefaction; later tearing is evident, running downward over

the cheek from the inner canthus; the coat is starring, appetite diminished or total inappetence, dullness increases; tearing may become more profuse; in some cases it has been noticed to diminish, but this is considered the exception; desquamation of epidermis, over which tears flow; about the fifth or sixth day ears droop, and while constipation is usually present at first, it becomes a watery purging about the sixth day; all visible mucous membranes are congested; vulva, nostrils, mouth and eyes; from the latter increased tearing mixed with mucous; saliva may dribble from mouth, while the diarrhœa becomes more intermixed



No. 2. Animal secured to operating table for bleeding purposes; sheared area over jugular vein indicates where animal was bled previously.

with mucus, later muco-sanguineous, giving off a peculiar and characteristic fetid odor; pregnant cows abort their young about the seventh or eighth day; the animal shows symptoms of much abdominal pain at each evacuation of the bowels and rumination is supplanted by a continuous grinding of the teeth; the skin becomes dry, and on the thinly hair-coated caraboo it resembles parchment to the touch, conveying heat to the hand, of the intense fever; exfoliation of the epidermis in region of the flanks is sometimes observed; twitching of the muscles and grinding of teeth, later accompanied with painful respiration. Discharges

from nostrils may contain blood and the palate has a peculiar salmon color; there has been seen mucous accumulation on the palate in form of nodules, but this was not a constant symptom observed by the writers, as only a few cases have been recorded with such lesions. The breath has an offensive odor; the color of the fæces is at first natural, later becoming a dirty brownish color; it is mixed with bile and mucus; evacuation of the bowels

No. 3. Rinderpest on seventh day, in which leg was so held as to make mucus discharge from nose more apparent; arched back, drooped ears and mucous accumulations at inner canthus and nose are typical.

is usually involuntary at first and thrown out with considerable force; later it is less in quantity and passes out, soiling the tail and hind legs; the animal is uneasy; loss of flesh is marked; thirst is great, and continuous desiring to sip water steadily; gait is staggering, causing pain at each step; left alone, the affected one will remain recumbent; breathing difficult and accompanied by low moan at each expiration; pulse is much accelerated,

along with high fever, and remains fast and more enfeebled until a few hours before death, when the temperature suddenly descends to below normal or to normal; body becomes cold; pulse almost imperceptible; breathing infrequent; animal in complete comatose state, usually with head thrown against right side, death coming on from eighth to tenth day, sometimes sooner. In milch cows the milk rapidly diminishes during the first stages. In many cases of apparent recovery the animal has been noted to suffer a relapse and die, probably due to the complication of either Texas fever or the surra parasite. While nearly all the Orient is immune to the former, it is the supposition that the attack of rinderpest has lowered the vitality and just at the subsiding of the latter. Texas fever is thus given ingress owing to the natural acquired resistance becoming lowered, and the same, in a measure, is true of surra.

Diagnosis.—This should not be so difficult, as one nearly always finds more than one sick animal, and possibly one that has just died, affording post-mortem advantages; but in the absence of this the elevation of temperature, tearing, the peculiar fetid diarrhœa, with offensive breath, drooping ears and the endemic nature of the disease; having had previous outbreaks, recent importation of animals from such places, mucus and blood in discharges and contagious nature.

Differential Diagnosis.—This is not always easy where other diseases of similar symptoms are known to exist, but, bearing the above cardinal points, no errors need be made.

1. *Malignant Catarrhal Fever.*—This disease is only slightly infectious, slower course and the lesions are confined to the respiratory organs and passages, with severe ocular disturbance; this latter symptom would be an excellent guide, taken with the history.

2. *Gastro-intestinal Catarrh.*—Cases are often met with which resemble rinderpest symptomatically, but the discharge from the eyes is more viscid than the latter and the absence of the peculiar fetid odor of the fæces, which is always present in rinderpest.

3. *Dysentery.*—In the affection the intestinal tract alone is involved, and while the diarrhœa is present the characteristic odor is absent.

4. *Anthrax.*—When in the gastric form may be confounded with rinderpest, but its course is more alarming; terminates sooner, as a rule; finding the bacillus would make it positive.

5. *Aphthous Fever* may present some symptoms similar to rinderpest; the presence of blebs on the lips, buccal mucous membrane and the coronet would aid the differentiation.

Pathological Anatomy.—The lesions of rinderpest are principally located on the mucous membranes of the digestive tract, the carcass is emaciated, buttocks and tail often soiled by fecal discharges, the cheeks below the inner canthus of the eyes are often excoriated, due to the irritating discharges from the ocular cavity. The changes of the mucous membranes of the mouth and œsophagus were not marked, save in the former, and then in a few instances some cases have been noted where the mucous linings of the rumen, reticulum and omasum were congested and slightly ulcerated; more common in the omasum than either of the former, but nearly all were normal. The contents of the omasum, while nearly all writers have claimed to have found some dry and hard, we found it fluid, with the exception of two or three cases, and in these semi-fluid consistency, this being noted in over one hundred post-mortem examinations held in various parts of the islands.

In the abomasum and intestines the most marked and characteristic changes are found. There is catarrhal inflammation of the mucous membrane, the submucous tissue is swollen and infiltrated with serum, the endothelium is detached in areas, varying in size from that of a pin point to a twenty-five-cent piece; especially is this true near the pyloric orifice; these areas are dark reddish-brown to black in color, the same graduating outward from a deep maroon at their border to a delicate carmine; the contents of the fourth stomach is serous and limited to quantity.

In the small intestines the congestion and inflammation is

of variable intensity, bearing a grayish to yellow muco-purulent exudate. In severe cases this presents a croupous exudate character, which often forms a complete cast of the affected potion. Peyer's patches and the other intestinal glands are particularly engorged; the contents consist of mucous exudates serum and small quantities of blood. In the large intestines the inflammation is less intense, but the cæcum is seriously involved, presenting a slaty appearance.

The liver is discolored, clayish in color and more or less friable; gall bladder distended, owing to obstruction of duct. The kidneys usually show a parenchymatous inflammation. The lungs have been found congested, also emphysematous, but we believe neither condition is characteristic. A fact worth mentioning is that the most severe cases ante-mortem showed very slight lesions on post-mortem examination, and the reverse was also true, hence it is supposed that in the former instance the time of sickness was too limited to admit of the pathological changes, and *vice versa.*

Treatment.—Medicinal treatment is not recommended, though there were times when anodynes and stimulants have served some small benefit.

For a period of six months or more intraveinous injections of anti-rinderpest serum were resorted to in large doses, 200 to 6,000 c.c., and if given with the initial symptom of the disease it was followed with good results, and under such circumstances more than 50% could be saved, but in cases where the symptoms are well established, as they usually are in the field upon your arrival, the customary method was to inject 200 to 300 c.c. subcutaneously, followed in two days with 200 c.c. more, with possibly 50 on the third day, it being too expensive and impracticable to give one sick animal more than 400 to 500 c.c. of serum.

The following tabulated report of an outbreak of rinderpest in the Province of Bohol gives some idea of the prophylactic and curative value of serum, remembering that in case of animals considered exposed or liable to become so 50 c.c. was given

subcutaneously, while the sick animals received 100 c.c. the first, second and third days, with 50 c.c. on the fourth, or more in individual cases:

	No. Inoculated.	No. Sick.	Deaths.
Week ending July 7	36	59	17
Week ending July 14	37	36	23
Week ending July 21	696	23	12
Week ending July 28	1,328	20	15
Week ending August 4	357	17	12
Week ending August 11	357	13	5
Total	2,811	168	84

In this case getting men and facilities into the field consumed most of the time, but the third week the real work began. Almost immediately the animals that were exposed, having had serum given them, the number of sick began to grow less and those that were sick and having had sufficient serum and time for same to become active they began to convalesce.

There are three methods of giving immunity against rinderpest, viz., the bile method, defibrinated blood method and the serum-simultaneous method.

1. *The Bile Method* (Eddington) consists in destroying an animal affected with or one that has just died from the disease, removing the gall bladder by ligating the neck of same, then separating it from the liver beyond the ligature, submerging the whole in a 5% carbolic solution, then emptying the bile in a retainer under aseptic precautions, adding one quart of glycerin to each two parts of bile, allowing same to stand for eight days, when it is ready for use. The glycerin destroys other agents in the bile, but does not injure the immunizing powers, rendering the same incapable of communicating the disease. The dose is 20 to 50 c.c., according to size of animal to be inoculated. Advantages of this method are: It is easily prepared and does not require special skill, renders temporary immunity to the exposed until the epizootic subsides and, given in large doses to affected animals, lessens the attack and may allow patient to recover. Disadvantages are: That it is expensive; owing to the small amount of bile secured, it is necessary to sacrifice a number of animals, some of which might recover; the immunity thus given

is only temporary, and will be of little value in warding off an attack of the disease six or eight months later; also the delay of eight days may cause considerable loss, allowing the malady to develop in all exposed animals.

2. *The Defibrinated Blood Method* consists in taking blood from an animal that has just recovered from the disease, defibrinating it all with proper aseptic precautions and injecting 50 c.c. subcutaneously, or in some instances more.

This has the advantage in that it can be carried on immediately and renders the animal so treated passively immune; thus it may retard more members of the herd from becoming sick; also there is no reaction to lower the vitality of the animal and allow other troubles to develop.

The main disadvantages are that in the subjects immunity is only temporary, (one to three months) and the danger of injecting into the system other infections, thus doing a harm instead of a benefit.

3. *The Serum-Simultaneous Method,* with a slight modification, was the one used at the serum laboratory and also in some provinces of the islands; it consists in inoculating the individual with 50 c.c. of serum and 1 c.c. of virulent blood on either side of the neck or shoulder; in practice this method was modified to allow the virulent blood to be inoculated ten days after the serum, thus giving the system time to take up the serum and the immunity to become effective to some extent, as we had no adequate method of determining the possibility of the animal having been infected naturally, in which case, by the simultaneous method, the additional amount of virus would only hasten the onset of the disease before the serum could become effective, thus causing a higher mortality than we should have. In typical reactions the temperature should rise to 40° or 41° C. on third or fourth day following the virulent blood inoculation, and should remain above 40° C. for at least three days. When it returns to normal gradually, and although the only visible symptoms may be the congestion of the conjunctiva and some tearing, more severe symptoms are common, varying with individuals and their susceptibility.

The advantages of this method are lasting immunity—supposed to continue through life—and that serum can be prepared and stored for several months, and one set of inoculations is all that is necessary. In case the reaction does not develop, the animal is rendered temporarily immune for several months and, having the animals under daily or bi-daily temperature chart, additional virulent blood can be given ten days later than the former, and thus bring on a reaction.

The disadvantages are that from 1% to 10% die from this method. It is impossible to regulate the amount of virus in relation to amount of serum to be given to animals in the same herd and the various degrees of susceptibility in different localities; also the greater skill is required, and it is expensive owing to the necessity of keeping trained assistants over each herd for at least ten or twelve days.

The additional danger with all inoculations where blood is used in countries infected with surra, as the Philippines are, is that of transmitting the *Trypanosoma Evansi* to the herd being inoculated through the medium of the virulent blood, the same having been obtained from another animal in possible distant regions from the herd receiving the inoculation inhabits, and as the above trypanosoma lurks in the plethoric caraboo for years without seeming harm to him and that repeated daily microscopic examinations of his blood is necessary to determine its presence, it is readily seen that one cannot be absolutely sure that he is securing virulent rinderpest blood that is not also carrying in it the trypanosoma which, administered to another herd under their lower vitality caused by serum inoculations and confinement, may develop so strong as to cause additional losses and a continued enfeebled state of many so inoculated, should they recover.

Another point we desire to make is that serum prepared from one specie should be used in that specie, as it has been proven that the immunizing agent produced in one specie is not so quickly or completely utilized in another specie, especially when administered to him, as is often the case, in his enfeebled state.

ARSENICAL POISONING FROM SMELTER SMOKE IN THE DEER LODGE VALLEY, MONTANA.

By D. E. Salmon, D.V.M., Montevideo, Uruguay, S. A.

(*Continued from May issue.*)

4. *Are similar lesions produced by the artificial application of arsenic to the horse's nostril?*—Similar, and, according to the writer, identical, lesions were produced experimentally in horses which were stabled and protected from the influences which caused the ordinary ulcers. However, it must not be supposed that a mere dab of arsenic on the mucous membrane of a horse's nose will cause the formation of an ulcer; for the process is neither so rapid nor so simple as to be developed in that manner.

It has seemed to the writer that the local irritating and corroding effect of arsenic when applied to the intact skin or mucous membrane is much less active than is generally believed. For example, Peterson and Haines say:(4)

"In the vast majority of cases the local action of arsenic is pronounced. It does not corrode dead and living tissue alike, as would the corrosive acids and alkalies. Vital irritability is required, or the effect on organic matter will be relatively small. Applied to a part, it irritates so profoundly that the phenomena of inflammation appear at once and make rapid progress to the latest stage of local death. It blisters the skin like a burn, and the mucous surfaces respond with equal promptness to its corroding touch."

Now, while arsenic will do all of this, there is an element of time required which might not be suspected from reading this paragraph; and this is precisely because arsenic is *not* a corrosive poison like the alkalies and mineral acids. That is, it must enter the cells and exert its action on the living protoplasm, and this action is made apparent, if the quantity of arsenic absorbed is

sufficient, by the degeneration and necrosis of the protoplasm. While the final result may be practically the same, it is clear that this is a much slower process than the sudden corrosion of the tissues by a caustic. It is not only slower after the penetration of the arsenic, but the arsenic must be applied longer to secure its penetration. The writer's first experiments failed on account of a lack of appreciation of this fact, and the experts for the defense were, according to their evidence, more or less astonished that their applications of arsenic to the Schneiderian membrane of the horse failed to produce the anticipated caustic eect.

The writer's earliest experiments were made by blowing arsenical powders into the horses' nostrils, the effort being to imitate as closely as possible the conditions of the natural application of smoke dust. These experiments failed, because these powders immediately excited a secretion of thin mucus and caused the animals to blow and snort, so that, in a few seconds, the material which was applied had been completely expelled. It was impracticable to continue these applications a sufficient time to obtain positive results. The first application of arsenic paste failed for the same reason.

To give a more definite idea of the action of arsenic when applied to the intact skin and mucous membrane, the notes of a successful experiment will be transcribed with some detail:

"October 3. An arsenical paste, made by moistening white arsenic with water, was applied to the nostril of a horse at the point where the natural ulcers were usually seen. The animal was carefully held for twenty minutes to prevent the dislodgement of the paste. When freed, he rubbed his nose, snorted and got rid of the paste as soon as possible, indicating that it had produced an unpleasant sensation. This horse was fed during the experiment on hay produced outside of the smoke zone.

"October 4. No visible effect from the application of the arsenical paste. Application renewed in the same manner as before.

"October 5. There is evident irritation where the arsenic was applied. Application repeated.

"October 6. There is irritation and thickening of the mucous membrane. Application repeated.

"October 8. Inflammation increased. Application renewed.

"October 9. There is now a small sore at the point where the arsenic was applied. Application repeated.

"October 10. The sore in the nostril is about half an inch in diameter and appears like a superficial erosion. Application repeated.

"October 12. The sore is somewhat larger; still superficial. Application repeated.

"October 13. There are now two ulcers in the nostril becoming confluent; also, a fissure extending along the floor of the nostril and following the course taken by the slight flow of nasal secretion. A careful comparison of these lesions with ulcers developing naturally, in the nostrils of horses at pasture on the same ranch, indicates that their appearance is identical in every respect. Application repeated.

"October 14. Application repeated.

"October 15. The ulcer is now 1½ inches long by 1 inch in breadth. It is covered with thick, black crusts and is just sufficiently moist on the surface for the dust from the hay to adhere and form these crusts, but there is little if any suppuration. There is still a fissure below the ulcer.

"The lesion resembles the naturally formed ulcers of three other horses on pasture on this ranch, and, after close comparison and study, it was concluded that their appearance was identical in every respect, even to the fissures below the ulcers. As the ulcer was so well marked and characteristic, no further applications of the arsenical paste were made.

"November 2. The ulcer is still about 1½ inches in diameter, with the crusts becoming loose around the border. The animal was killed and the nose taken to Butte, where it was entered as an exhibit at the hearing."

The ulceration, in this case, began within a week from the first application of the arsenic, and a large, deep ulcer was developed within two weeks. This was also about the rate of devel-

opment of the natural ulcers at pasture. However, in the production of the artificial ulcer the arsenic was applied for only twenty minutes at a time on ten different days, while, in the production of the natural ulcers, the application was doubtless for 12 to 15 hours a day for every day while at pasture after the smoke dust had been deposited on the grass. The more constant application of the smoke dust, therefore, was sufficient to counterbalance its lower content in arsenic.

5. *Have similar lesions been observed in man when breathing dust containing arsenic?*—In the quotations already made from Harkins and Swain, it has been shown that one of the persons who worked on the smelter stack, in determining the arsenic content of the smoke, had his nostrils almost closed by the inflammation which resulted from inhaling the smoke dust, while the irritating effect of the dust from grain in the smoke zone was such that it seriously affected both the eyes and nasal passages of the threshers.

Some previous observations of this class of lesions are reviewed by G. Brouardel, who says:(5)

"The nasal lesions caused by the direct application of arsenic transported by the fingers, or by the contact of arsenical dust, are quite frequent. Hillairet, according to Rollet, was the first to describe these lesions and to show that they might even perforate the nasal septum.

"According to Delpeuch, there is, at first, inflammation and swelling of the mucous membrane; the projecting parts of the external wall of the nasal fossæ fill the space which separates them from the septum and become adherent. In this way occurs occlusion of one or both nasal fossæ, the nostrils being transformed into culs-de-sac. It is the arsenical dust accumulated in these culs-de-sac which causes the ulcerations, and, according to Rollet, these occur with the workmen above all on the external wall and on the septum. On the external wall two points are especially attacked because they project: the anterior extremity of the inferior turbinated bone and the projection formed by the external branch of the cartilage of the wing of the nose; this

projection corresponds to the depression which constitutes the grove of the wing of the nose.

"By dilating the nostrils, the ulcerations may be seen with their grayish and bloody surface; sometimes there is perforation of the cartilage. Delpech's patient had a perforation 1.5 c.m. in width and 2 c.m. in length above the inferior border of the lower septum; this perforation extended to the perpendicular plate of the ethmoid. Another case cited by Rollet had an oval perforation with a long antero-posterior diameter of 10 to 15 millimeters, seated above the lower septum and on the anterior part of the median cartilage."

Dr. Thomas M. Legge, Medical Inspector of Factories, Home Office, in his evidence before the Royal Commission on Arsenical Poisoning, said, in substance:(6)

In the manufacture of arsenical sheep dips, a peculiar condition of erosion of the septum of the nose is brought about. The perforation is similar to that found very commonly among men working in factories where bichromate of potash is packed. The perforations cause permanent destruction of the part, but it is limited. It does not involve the whole of the septum of the nose, so that there is not much disfiguration in the cases where it has occurred.

In his written statement submitted to the Commission, Dr. Legge said:(7)

"*The manufacturers of sheep dip.*—The manufacture is carried on in about ten factories and workshops, of which I have recently visited four. I append the results of the superficial examination of 18 men employed in the largest of them. Perforation of the septum of the nose had not been mentioned to me, in any of the factories visited, as one of the effects of the employment. On the condition of No. 12 being noted, I was informed that they were the symptoms which would be presented by nine out of ten persons on commencing work. None of the men examined confessed to injury to health from their employment. Sheep dip is an arsenite of soda containing arsenic sulphate and free arsenious acid. The process of packing gives rise to considerable dust. * * *

"The morbid process is ushered in by sneezing, and the ordinary symptoms of nasal catarrh. Pain accompanying it appears to be very slight, and it is certain that many of the men were unaware of the perforation."

Dr. Legge's detailed statement shows that 7 of the 18 workmen referred to had perforation of the septum. In one the perforation was ¼ by ¾ inch in size; in another ¼ by ½ inch, and in a third ¼ by ¼ inch. The dimensions in the other cases were not given.

Dr. Stevenson said with regard to the local effects of arsenic:(8)

"I have seen numbers of men in tanneries who were affected, that is to say, they got their cheeks affected, and their eyes, their lips and their genitals, from handling them with unclean hands when urinating, and they got troublesome sores. * * * I saw a man once who had his cheek perforated by such a sore."

These various observations serve to give a very clear idea of the local effects of arsenic, of its activity in causing ulcerations, and of its great tendency to cause sores, ulcers and perforations in the nostrils of the workmen who are employed in factories where there is much arsenical dust.

6. *Was there sufficient arsenic in the crusts and tissues of the Deer Lodge Valley ulcers to indicate that these lesions were due to arsenic?*—Notwithstanding all the evidence which has been presented indicating that the nasal ulcers of the horses in the Deer Lodge Valley were due to the irritating effects of the arsenic contained in the smoke dust, it seemed important that actual analyses should be made of the crusts and tissues of the ulcers in order to prove the presence or absence of arsenic in the lesions. If it were present even in small quantities, it would be a strong confirmation of the theory that the ulcers were produced by this poison. Accordingly, samples were taken from a number of horses; some consisted of the thick crusts alone, which were removed from living horses; others of the crusts and floor of the ulcers, which were removed at the time autopsies were made. These samples were analyzed by Harkins and Swain with the following results:(9)

No. of Sample.	Distance from Smelter, Miles.		Parts As_2O_3 Per Million.
1	2	S.	254
2	4.5	N.N.E.	587
3	3	S.E.	1,015
4	2	S.	902
5	3	S.W.	545

These analyses give an average, with five samples, of 660 parts of arsenious acid per million, an enormous quantity, which was far beyond any anticipations that were harbored by the writer before the analyses were made. It may, therefore, be admitted that all of these lines of evidence are in harmony with the theory that the ulcers are caused by the direct action of arsenic at the point where the lesion appears, while the presence of so much arsenic in the crusts and tissues of the ulcers, considered in connection with the other lines of evidence, must be accepted as direct and convincing proof that this is the cause.

7. *Why are not similar lesions observed in other species of animals?*—This is a question that was often asked by persons opposed to the arsenical theory, and, while it is by no means necessary that it should be answered in order to establish that theory, it is, nevertheless, desirable that it should receive some attention. Comparing equine and bovine animals, it must be admitted by all that the horse bites closer to the ground than the steer or cow, and this fact, together with the use of the mobile upper lip, makes it probable that more dust is raised and drawn into the nostrils by the horse when eating grass at pasture than by bovine animals. Secondly, the skin and mucous membrane at the entrance to the nasal chambers of the horse are much thinner, softer and more sensitive than those of the cow, and, no doubt, would be affected much more easily; besides, the tissues of the horse are, in general, more easily irritated and inflamed than are those of the cow. Thirdly, the bovine animal has an

inestimable advantage in being able to protect itself from the prolonged action of an irritant, at the point corresponding to that where the ulcer develops in the horse, by easily inserting its tongue into the nostril and removing the irritating material. It is to these peculiarities of bovine animals that the writer attributes their exemption from the nasal ulcerations.

The sheep, which resembles more nearly the horse in its manner of biting the grass, and in the sensitiveness of the skin and mucous membrane of the nose, is not exempt from the ulcerations, though from their smaller size in this animal the ulcers are not so conspicuous. Dr. Formad, who made an investigation on behalf of the U. S. Bureau of Animal Industry, has given a very conclusive illustration, from a photograph, of such an ulcer in a sheep's nostril, and states that out of a flock of 60, pastured about ten miles north of the smelter, 10 were examined, and 3 of these had nasal ulcers.(10)

The writer, also, saw these ulcers in sheep and made a record of the examination of 4 of these animals on the Para ranch, December 5, 1906, of which 3 had ulcers in their nostrils very similar to those of horses, and these were covered by soft black crusts. Horses, therefore, are not the only animals which suffer from the "sore noses," and the fact that cattle do not exhibit such lesions cannot be accepted as valid evidence against the arsenical theory.

To recapitulate:

The "sore noses" or nasal ulcerations of the horses of the Deer Lodge Valley do not appear in the summer or fall until two or three weeks, or longer, after the smoke has been over the valley.

They are not inoculable.

They begin to heal at once if the horses are removed from the pastures and fed on arsenic-free hay.

They are not transmitted by cohabitation.

Similar "sore noses" have been observed in horses around other copper smelters.

The nasal mucous membrane of horses at pasture, at the time

the ulcers are beginning to appear, is coated with smoke dust rich in arsenic.

Similar lesions may be produced by the artificial application of arsenic.

The breathing of arsenical dust is a frequent and recognized cause of ulceration of the nostrils and perforation of the septum in the men who work in factories where such dust is generated.

There is a tremendous quantity of arsenic in the crusts and tissues of the naturally developed ulcers.

Similar ulcers, also, develop in the nostrils of sheep which are feeding on the same pastures.

These facts lead irresistibly to the conclusion that the ulcers are caused by arsenic; that their beginning in the summer or fall is dependent upon the direction of the wind currents and the deposit of smoke dust on the pasture grass; that their disappearance in the late winter or spring is due partly to feeding upon hay, partly to the dust being removed from the grass by the storms of winter and spring, and partly to the currents of air carrying the smoke away from the valley at that time of the year.

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5. Brouardel, G.: L'Arsenicisme, p. 100.
6. Royal Commission on Arsenical Poisoning: Second Report, Pt. 2, p. 152.
7. Loc. cit., p. 155.
8. Royal Commission on Arsenical Poisoning: First Report, Pt. 2, pp. 89-90.
9. Loc. cit., p. 942.
10. Formad, Robert J., V.M.D., M.D.: The Effect of Smelter Fumes upon the Live Stock Industry in the Northwest. Twenty-fifth Annual Report of the Bureau of Animal Industry, Washington, 1908, p. 253.

CORRECTIONS.—In Dr. Whitehouse's article on page 216, May issue, the word variety should read *rarity,* salt should read *salts* on page 217, and rumen should read *lumen* on page 218.

THE OLD FRANK WORTH TROTTING HORSE STABLE FILLED WITH SADDLE HORSES.—The elegant stable, substantially built years ago, in West Fifty-sixth street, New York, by Mr. Frank Work as a home for his trotters, has been leased by several Wall street men, and is being used by them as a sort of private club-stable for their saddle horses, numbering among them some of the best in the country.

THE RELATION OF THE LABORATORIAN TO THE PRACTITIONER.

By Leroy F. Thompson, D.V.S., Fort Worth, Tex.

Continued from May Issue.

In 1880 Evann described the trypanosome of surra and succeeded in transmitting the disease by inoculation experiments. Following closely upon this discovery was the discovery of the cause of malaria by Laveran in 1882, and the causative factor was given the name of *Plasmodium malariæ.*

Progress was delayed in the study of minute objects like bacteria because of lack of proper methods for their isolation, identification and observation. Koch and Pasteur were, it is said, to be the first to use, successfully, culture media wherein pathogenic micro-organisms could be grown. To Koch we are also indebted for our knowledge of the solid media which is used for the isolation of organisms from mixed cultures, thereby relieving the practitioner of doubt as to the real specific cause of a given disease. This contribution and its importance can hardly be overestimated, for the use of pure cultures lies at the very foundation of all modern bacteriologic laboratory investigation. To this discovery is due in a large measure the rapid advance made during the two decades in the identification of the organisms producing disease.

To Weigert we owe the honor and credit for being the first man to use the aniline dyes in rendering cells and their structures more plainly visible under the microscope, but to Koch, again, we owe the credit for their application in bacteriology. Since their introduction successive adventures in staining technique have in every instance been followed by the discovery of new organisms related to disease, therefore the microscope, perfect technique, liquefiable media and aniline dyes represent the

most important factors to the laboratory man in the development of the science of bacteriology.

In 1875 the credit is due Lister for using the first antiseptic precautions, though crudely, but which opened up the field for progressive and scientific surgery.

The influence maintained by the laboratorian to-day in the development of veterinary medicine really began with Virchow, who nearly a century ago established the cellular theory from which has developed cellular physiology and the detail of cellular action of various drugs. So the theory of ancient history known as the humor theory, which was the belief at that time—that the body was made in the form of a sack or bottle and contained but three fluids or humors—was successfully explained by this remarkable discovery.

Secondly, I will endeavor to bring out only a few points in immunity to further show the need for closer relationship between the practitioner and laboratorian. Further, to show the practitioner just how much he is indebted to the laboratorian for his zealous work in this branch of knowledge and science in the successful treatment and eradication of disease.

Immunity is a term used to express relative resistance to disease. It is defined by Ricketts as follows: "By immunity we understand that condition in which an individual or species of animal exhibits unusual or complete resistance to an infection for which other individuals or other species show a greater or lesser degree of susceptibility." It is but natural, then, for the converse of immunity to be susceptibility or lack of resistance. It is therefore easily noted the broadness of this subject and hence the need for me to deal with it as briefly as possible in order that a part of it may be incorporated within the scope of this paper.

There is a great deal of credit due to the laboratorian for his contribution to the medical world of the various biologic products which are of so great a value to the profession and the world at large in the prevention and treatment of disease. The time has come when prophylactic science in the eradication of disease is

of the utmost importance and is so recognized by all progressive and scientific medical men. Which condition was only brought about by constant labor, combined with patience and devotion by the experimental laboratorian.

The time is not far distant in my opinion when we will have at our command for use a specific biologic product for each infectious disease. We also have the various theories of immunity at our command to further our education into the intricate depths of medical science, and the proper understanding of them would result, I believe, in more intelligent treatment and eradication of disease. Which conditions were brought about by these same men of science who toil away their energy and life in a laboratory.

To mention a few, I will call your attention to the humoral theory of Ehrlich and his noted lateral chain theory, along with his toxin, antibodies and chemic therapy beliefs, that have proven to be of so great a value to the world. The theory of phagocytosis, by Metchnikoff. Wassermann's test has been of great importance to science and is being used as an accurate aid to diagnosis. Also that of anaphylaxis, as stated by Anderson and Frost, is a step toward immunity, which is considered as an increased capacity for safely and rapidly eliminating the specific antigen proteid.

There is being manufactured and used daily in this country many products as the result of these important discoveries; for illustration, the many serums, bacterins, vaccines, antitoxins and chemio-therapeutic agents used in the prevention and care of various infectious diseases; some of the more important are rabies, influenza, anthrax, typhoid, Texas fever, hog cholera, pneumonia, tetanus, blackleg, cerebro-spinal meningitis, sausage poisoning, diphtheria, and canine distemper. In addition to the foregoing products there is a great use and demand for biologic products for testing animals for infectious diseases, and brought about wholly as the sequence of such laboratory work.

To call your attention to the importance of these discoveries, I will name a few diseases and enumerate some points and facts

relative to them which were brought about by laboratory tests and experiments.

Rabies is one that is very important to us all, so it will be the first on the list.

To Negri, the Italian scientist, we owe the credit of first demonstrating a successful lesion, whereby we could more definitely diagnose this malady, and in consequence the test has been named for him and is known as the Negri body test. The Negri bodies exist in an affected animal within the *Hippocampus cerebri* and are readily discernible as minute red areas to the experienced laboratorian. By this test there has been removed many chances for making an erroneous diagnosis on the part of the practitioner, thereby giving him the advantage of imparting intelligent advice to his patron early in the case, and in that way it would be the means of preventing many serious complications. There are many cases of hydrophobia that can be diagnosed by no other test, or by any symptoms presented by the patient.

At the Kansas City Veterinary College Laboratory there has been presented for diagnosis 161 cases between the 1st day of January, 1910, and the 1st day of February, 1912, and which resulted in a positive diagnosis of 127 cases, or 79.2 per cent. The mortality has been decreased greatly by the use of the Pasteur method of treatment.

To digress somewhat, I will mention here that it is of primary importance that when one is bitten by a suspicious canine, it will facilitate diagnosis greatly by killing the dog and remove its head and pack it in ice and send it to a laboratory at once. I will also mention the fact that most laboratories are in a position to supply home treatment, this consisting of mailing the vaccine to the attending physician daily, which he injects in the patient; thereby eliminating the necessity of going to a hospital as well as saving time and expense.

Tuberculosis is one of the greatest maladies that we have ever had to combat, but, nevertheless, the laboratory is making great inroads on its effectiveness by giving to the world the cause and many prophylactic measures for its use and suppression of this much-dreaded disease.

The tests now used for this disease are known as the subcutaneous, ophthalmic and intradermal tuberculin. Through the use of them there has been carried on a great work in the eradication of tuberculosis.

Glanders is another important disease and is worthy of the efforts of both the laboratorian and practitioner.

The various tests given the profession by the laboratory I will merely name, as there is too much to them to go into detail in this paper. The following are recognized by the profession at this time: Auto-inoculation; extirpation of submaxillary gland and examination for *Bacterium mallei;* Strauss' method of guinea pig inoculation; mallein; subcutaneous, ophthalmic and cutaneous test; serum agglutination; precipitation; Konew's modified precipitation; complement fixation; potato test culture, and lastly, the combined complement fixation and agglutination tests for which the Bureau of Animal Industry showed the greatest preference in their last report.

In dealing with the parasitic infestations the practitioner very frequently is confronted with cases that would baffle him entirely, if it were not for his laboratory training and he did not resort to that means for reaching an intelligent diagnosis.

Tumors are another source of grief to the untrained practitioner, in that he cannot, with any degree of positiveness, differentiate between malignant and benign growths without the aid of the laboratory technique, methods, microscope and laboratory science.

Without the assistance of the laboratory the practitioner would be at a loss to properly diagnose or differentiate between various poisons as met with in his practice.

Milk and its products as handled and distributed is a very easy medium to adulterate and contaminate, thereby requiring the scientific inspection of competent laboratory men to discover it. So therefore it is of the utmost importance that nothing but conscientious, honest and progressive laboratorians be employed to safeguard the public health and their welfare, through this, one of the most important food products.

With the knowledge of laboratory science and methods, an experienced laboratorian is capable of detecting any adulteration, the quality of the product, amount of the various ingredients and the number of bacteria to the cubic centimeter.

The microscope is also invaluable to the breeder of fine animals, as it gives him the means whereby he can detect sterility very readily where otherwise it would be impossible for him to ascertain the cause; as there is quite frequently met with males that ejaculate properly, but on microscopic examination the spermatozoa is found to be dead.

Urine analysis is another great aid to the practitioner and can be carried on only through having an intimate knowledge of laboratory work.

Last but not least is the great amount of knowledge that has been given the practitioner through the discovery by the laboratorian of that important branch of medicine, namely, hematology. Through this discovery there has been many conditions and diseases, with their cause, brought to light, so they can be met with, combated and treated with some degree of intelligence. The various tests for hemoglobin, and the knowledge of blood corpuscles and the number of their variety, has rent the veil of mystery that has inshrouded blood diseases for so many centuries.

The knowledge of the blood count with the variety of the leucocytes in certain specific conditions has rendered diagnosis more positive by the aid of the new laboratory equipment. The same may be said of the rapid advance in bacteriology since the discovery of a method for isolating, cultivating and counting of bacteria.

It is with pleasure that I note the addition of the laboratories in our educational institutions, and hope that they will continue to improve along that line, as men with such advantages will readily see the importance of the laboratorian to the practitioner.

* * *

Following the discussion of this paper, and as a result of questions put to the author, he stated that he was of the opinion

that it depended entirely upon circumstances as to whether or not a practitioner should be his own laboratorian. If there was a competent laboratorian near at hand, it was his belief that the practitioner should consult him; if such was not the case, and the practitioner had the means, it would be in order for him to fit out a small laboratory. Further, it was his opinion that the day had arrived for specialization in veterinary medicine, as in other branches of human endeavor and science.

It was also his belief that it is impossible for the average man in veterinary medicine to be both an expert in laboratory work and a successful practitioner.

DR. SAMUEL E. BRUNER, of Greensburg, Pa., has been appointed veterinary inspector on Live Stock Sanitary Board. Dr. P. K. Jones has been promoted to charge of Union Live Stock Yards, Pittsburgh, Pa.

TROTTING IN 1912.

(MEETINGS ON MILE TRACKS).

Grand Rapids, Mich., July 8-12.
Kalamazoo, Mich., July 15-19.
Detroit, Mich., July 22-26.
Pleasanton, Cal., July 24-29.
Cleveland, Ohio, July 29-Aug. 2.
Pittsburg, Pa., Aug. 5-9.
Decatur, Ill., Aug. 6-9.
Buffalo, N. Y., Aug. 13-16.
Peoria, Ill., Aug. 13-16.
Galesburg, Ill., Aug. 20-23.
Salem, N. H., Aug. 21-23.
Boston, Mass., Aug. 26-31.
Portland, Ore., Aug. 26-31.
Hartford, Conn., Sept. 2-6.
Minneapolis, Minn., Sept. 2-6.
Syracuse, N. Y., Sept. 9-13.
Louisville, Ky., Sept. 9-14.
Fort Wayne, Ind., Sept. 10-14.
Milwaukee, Wis., Sept. 10-14.
Sacramento, Cal., Sept. 14-21.
Detroit, Mich., Sept. 16-21.
Dubuque, Iowa, Sept. 16-20.
Nashville, Tenn., Sept. 16-21.
Columbus, Ohio, Sept. 23-Oct. 5.
Stockton, Cal., Sept. 23-28.
St. Louis, Mo., Sept. 24-28.
Sedalia, Mo., Oct. 1-5.
Fresno, Cal., Oct. 1-5.
Birmingham, Ala., Oct. 3-12.
Springfield, Ill., Oct. 7-11.
Richmond, Va., Oct. 7-12
Lexington, Ky., Oct. 8-19.
Dallas, Tex., Oct. 12-23.
Los Angeles, Cal., Oct. 16-19.
Phoenix, Ariz., Nov. 4-9.

THE INTRADERMAL TUBERCULIN TEST.*

By D. F. Luckey, D.V.S., Bloomfield, Mo.

The old subcutaneous test is so unsatisfactory in so many different ways as to give due cause for rejoicing at the discovery of a simpler test, and one that promises to be if anything more accurate. In extreme cold weather the night and early morning work required in taking temperatures of cattle is disagreeable in the extreme. In hot weather, when cattle are accustomed to the comfortable conditions of the shady bluegrass pasture, it is almost inhumane to confine them for 24 hours in a hot dairy barn. Very frequently, indeed, an animal will be found which is in no condition to give a true reaction to the temperature test. It is no uncommon thing to have to postpone a test on a cow that is found in heat, one in advanced pregnancy, or one which has recently brought a calf. Various other agencies, too numerous to mention, interfere with the temperature and the length of time required to give the temperature test makes it impractical to use this test in examining small lots of cattle scattered through the country. This fact has become extremely apparent to us in attempting to test all of the cattle furnishing dairy products to a city in this state.

The intradermal test has many advantages over the temperature test. No night work is necessary. Neither age, nor the condition of the animal cuts much figure, if any at all, with the reaction from the intradermal test. A cow that is in heat, one that is in advanced pregnancy, one that has recently brought a calf or aborted, young or wild animals that are excited or worried may be tested with the intradermal test, as well as the old gentle cow that stands quietly in her stall. The intradermal test is so many times more expedient, as to make comparison

* Presented at Semi-Annual Meeting of the Missouri Valley Veterinary Medical Association, Kansas City, January 1912.

almost unnecessary. Without it we would have been entirely unable at any reasonable expense to make the tests of the small scattered herds furnishing dairy products, for instance, to the city of Columbia. With the use of the intradermal test we have tested over 700 lots of cattle for this city, many of which contained one, two or three animals. Except for the intradermal test coming to our rescue, we should have been compelled to abandon our plans for the eradication of tuberculosis in the State of Missouri.

For several years we have wished, and almost prayed, for some more satisfactory and expedient method of testing cattle for tuberculosis than the old temperature test. We have diligently tried out every test that has been mentioned in veterinary literature. As soon as what is known as the "eye test" was announced we gave it a thorough trial, and found it inaccurate. About the same time we tried out the method of scratching the skin, and inoculating the scratch with tuberculin, or what was known as the "skin test." This also fell far short of accuracy. It only took a few trials to discover that both of these were unreliable.

Naturally, when the intradermal test was announced, we longed for it to be a success, but were very skeptical about it. We, therefore, began its use with extreme caution. We had so little faith in it that we never thought of using it at all, except to compare to the temperature test before any animal was condemned. Results were surprisingly satisfactory from the beginning. We looked for a chance to give it a severe trial. For this purpose we selected an old herd which we reasonably expected to be badly diseased with tuberculosis. Fifty-nine of the old animals in the herd were given the intradermal test. One reaction resulted. We were about ready to discard this test without further trial, but we followed up in a few days with the subcutaneous test, and, strange to say, got a slight temperature reaction in the same animal and no others. The reaction from the intradermal test was more marked than that from the temperature test, the latter giving what is ordinarily considered a

" suspicious " reaction. The cow was old and practically worthless and so therefore condemned on the suspicious reaction to the temperature test. Our doubt about the accuracy of both reactions was increased for the reason that this cow had been in the herd for a number of years and none of the other animals had become affected, which is directly contrary to the general rule. She soon went to slaughter and showed a tuberculous lesion of the liver, thereby strengthening our faith in the intradermal test and explaining why the other cattle in the herd had not become affected. We then began the use of the intradermal test in small lots of cattle scattered out through the country around Independence, but never with the thought of condemning an animal showing a reaction to it until the temperature test had been applied. We soon found that the verification of the intradermal test with the temperature test was superfluous and unnecessary, but for the sake of trying the matter out thoroughly we continued to carry the temperature test along with the intradermal test in diseased herds after we began testing cattle in the vicinity of Columbia. However, we soon discovered the tuberculous centers in the vicinity of Columbia. We ventured to rely upon negative results from the intradermal test in all cattle with a good history. Before finishing the work around Columbia, however, we abandoned the temperature test and used the intradermal test altogether. We left the tuberculin testing off about July 1, and our whole force went on to tick eradication. When we took up tuberculin testing again last fall we did so with the intention of using nothing but the intradermal test. Several lots of cattle around Springfield, Pleasant Hill and St. Joseph were tested up to December 31, in all 3,458 head. Forty-four herds were found to contain one or more reacting animals. One hundred and thirty-eight head of cattle were condemned. One hundred and three of these condemned cattle have, to this writing, been slaughtered and lesions of tuberculosis visible to the naked eye found in all but two. Considering the condemned animals alone, the intradermal test has apparently made two errors out of 103 post mortems. At this

ratio, there is a probability of less than one error in the 35 reacting cows still on hand. Up to the present time, the intradermal test shows a little over 98 per cent. accuracy. Granting that one more animal will show no lesions, making three in all, we shall have made three errors in testing over 3,458 head of cattle. This is far better than we have ever been able to do with the temperature test.

In beginning our intradermal test we were a little careless, sometimes purposely so, in regard to surgical cleanliness. While it is impossible to approach surgical cleanliness in using this test, we soon found it paid to be as clean as possible. Very few swellings result from infection and they are quite different in character from the swelling resulting from a positive reaction. The former is soft and inclined to extend along the tail, and passes away sooner. The characteristic reaction from the intradermal test is slightly rounded, very hard, rather painful and persists for several days. As far as our experience has gone, it appears that the reaction from the intradermal test will, on the average, be at its height on the third day. Sometimes, as matter of convenience, a re-examination of cattle after injection may be made on the second or fourth day, but our rule is to make this examination on the third day.

We have found that the intradermal injection should be made with a medium-sized needle; a very small needle might be preferable, but is too easily broken. It is my opinion that the opening in the epidermis made by a large needle gives more opportunity for infection. We find it convenient to administer this test, taking hold around the tail with the left hand, and seizing the bare skin on the under surface between the middle finger and the thumb, pulling it around as far as possible to one side. At first we attempted to pick up the caudal fold. We soon found that this was a waste of time, and in our desire to get along with the work, we were willing to make the injection wherever we could find the skin soft and pliable. It is difficult to describe the insertion of the needle, but herein lies the secret of accuracy. A thoroughly clean needle should be pushed along

under the surface of the skin, only deep enough so that when the tuberculin is injected it will not ooze out through the surface. Three or four drops of tuberculin is sufficient to give a reaction. It is impossible to gauge this small amount on the plunger of any ordinary syringe. For all practical purposes, it is sufficient to watch the point of injection and press upon the spring-handle until a little elevation, something like the size of a navy bean or a little larger is produced. By counting up the amount of tuberculin used, we find that about three drops will produce a little elevation of this size. A re-examination of a herd of cattle that are free from tuberculosis on the third day after injection shows absolutely nothing. It is extremely difficult, and in many cases impossible to find where the injection was made. In a tuberculous animal a swelling appears, which varies quite a good deal in size but is sufficiently large, as a rule, that it may be seen for quite a distance. The swelling is hard, painful and sometimes extends around to the upper surface of the tail, and remains from five to ten days.

In all forms of tuberculin tests an animal now and then will fail to show a clear-cut reaction, either negative or positive. I have not been able to figure up the number of "suspicious" reactions from the use of the intradermal test, but as far as we have gone, the indications are that the suspicious reactions will be much smaller than with the use of the temperature test.

I might say in conclusion that while the tuberculin test seems to be a very simple matter and that farmers and students are inclined to undertake it, it really requires extreme skill, judgment and care, if accurate results are to be expected. Neither veterinarian nor layman can jump in and make tuberculin tests and do the most accurate work at the beginning. We credit our record for accuracy to the fact that our men are well qualified veterinarians, are at this work continually, and receive post mortem notes on all cattle slaughtered, while the animals are still fresh in their minds. Only after working at this testing for six months or a year is a veterinarian able to get the most accurate results. Where a veterinarian is testing all the cattle in

the community he soon gets familiar with the infected herds and has the history of many animals which he tests to aid him in drawing conclusions. Without such history more errors are bound to occur.

Right here I would like to explode the fallacy of the yearly testing of dairy herds for tuberculosis. It seems that when the matter of testing dairy cattle was first discussed it popped into somebody's head to test these cattle every year, and this theory has been blindly followed. We find in our state work that if an open case of tuberculosis is found in a herd, even though the diseased animal is promptly removed and the premises disinfected, one or more additional animals are liable to develop tuberculosis within the next few weeks. There is exposure on the day of the test, and shortly before it, which, theoretically, would cause other animals to develop tuberculosis. Our observation for the past twelve years shows this theory to be absolutely correct in many cases. We had a fine example of results of an annual retest in the State Hospital herd at Farmington, Mo. In 1908 two cows reacted and were removed from the herd with reasonable promptness. The people in charge were instructed to disinfect. There is no doubt but what some of the other animals were probably infected upon or soon before the day of the test was made and did not show any reaction. At any rate, the test in 1909 showed five animals diseased. These five were shipped out a little more promptly. The test in 1910 showed eleven of the best cows in the herd to be diseased. This was about what you will get with the annual tuberculin test when you are handling diseased herds. The results will not always be as bad as this, but will be in many cases. In order to clean up a herd in which an open case of tuberculosis is found, a retest must be made every sixty days, until no reactions are found and then again at the end of a year. Nothing short of this will be certain of results, so that with an annual retest of dairy herds you are likely to find almost as many tuberculous cattle each succeeding year as were found in the beginning. In the meantime the people who are seeking protection from tuberculous milk and

paying for services have gotten nothing for their money. The work of the veterinarian is discredited and the efforts of the city and state officials to correct conditions more or less disgraced. On the other hand, we find herds of cattle in this state which have been in existence for forty years and which do not contain a single diseased animal. When any herd of cattle is tested and found sound, especially if tested twice in succession, to make certain that no diseased animal has been passed over, it can be safely counted as sound permanently, provided no diseased animals are added to it. An annual retest of sound herds of cattle is unnecessary and there is not the slightest reason for it. The annual testing of dairy herds causes a lot of expense and trouble, and can never bring practical results. To save a lot of expense to the public and a lot of worry to the owners of sound herds, a record of these herds ought to be made and a certificate of health renewed annually without an inspection, according to the judgment of some competent person who should be placed in charge of this line of work. A temporary certificate of health running not more than sixty days should be issued to the sound animals in herds from which diseased stuff has been removed and repeated retests should follow one after another until the disease is eradicated. In no other way will the eradication of tuberculosis ever be completed in any state or county.

Veterinarians in private practice ought to bear in mind that human lives are endangered by the presence of tuberculosis among cattle, and this is not a matter where the fees gotten out of such inspections are of primary importance. It has taken a great deal of hard work on the part of the authorities to arouse the public to a realization of the great danger from bovine tuberculosis. All kinds of objections have been made to the inspection of cattle which are used in our dairies or intended for shipment out of the state. Those who have shouldered the responsibility of pushing this campaign of education forward have been accused of many different things, among which was that it was a scheme to get work for veterinarians. It has been argued that the tuberculin test was not accurate. Veterinarians

have been accused of dishonesty. Many other points have been argued against progress in this important matter. We have barely made a start and there is yet a lot of worry before those who assume the responsibility of getting our herds free from tuberculosis. If we attain the highest success and maintain the reputation of the veterinary profession, it will be necessary for all veterinarians to be extremely careful, to be extremely accurate and conscientious in making tuberculin tests and to regard the matter in its true light, rather than a line of work invented to get fees.

PICTURE BOOK OF LIVE STOCK CHAMPIONS.—The following is extracted from the NEW YORK HERALD of May 26th, in the belief that it is of interest to veterinarians: "Philip H. Hale, editor of the *National Farmer and Stock Grower,* in St. Louis, has just published a picture book of "Live Stock Champions," which is full of interest to horsemen. It contains 720 indexed portraits of noted animals, among which are scores of thoroughbreds, trotters, hackneys and draught horses. Schreiber's photographs of Rysdyk's Hambletonian, Ethan Allen, George Wilkes and other old time trotters make the book of lasting value to votaries of harness racing."

MEMORIAL TO DR. CRAWFORD W. LONG.—We have recently had the pleasure of perusing a "special bulletin" issued by the University of Pennsylvania, a memorial to Dr. Crawford W. Long of the class of 1839 (medical), giving an account of the ceremonies of the unveiling of a bronze medallion, which occurred in the medical building on March 30, 1912, to the memory of Crawford W. Long, M.D., who first used ether as an anaesthetic in surgery on March 30, 1842, as shown by original documents presented at the British Medical Association meeting, in London, in the summer of 1910, by Mrs. Frances Long Taylor, daughter of Dr. Long. The medallion is a beautiful piece of work, showing Dr. Long, then less than thirty years of age, bending over a recumbent patient, dropping ether from a bottle held in the right hand on a towel that partly covers the patient's face. The bulletin is extremely interesting reading.

A VETERINARY POTPOURRI.*

By S. R. Howard, Hillsboro, O.

"Aye free, off-hand, your story tell
When wi' a bosom crony,
But still keep something to oursel'
Ye scarcely tell to ony."

Yes, yes, I am still in the same darned, old veterinary profession, and, although I know I am not as thoroughly informed along certain lines as I am wont, still I am what might be called an every-day country veterinarian. Therefore, I speak not as the scribes, but as one having authority.

I may not have accomplished much. I do not claim to have accomplished much, yet it is something to have made a living out of the art for 25 years, and I do claim to have done this in spite of difficulties, obstacles and cut-throat competition that some would not have endured. But such experiences are what makes us optimists.

The district in which I live is rolling and none too fertile, and to tell how little I have sometimes earned during periods of poor crops and financial distrust would challenge credulity. Still I am at the same old stand and thank the Lord I am still paying one hundred cents on the dollar, all of which means that I may be called an "also ran," but I have never been left at the post.

I have often thought of a friend of mine who said he had nothing when he commenced practice thirty years before, and he was still "holding his own."

I have always been my own office boy, done my own stable work, and do yet, attending my horses and cow and am almost and altogether somewhat poky and old fashioned. (Hence the

* Presented before the Ohio State Veterinary Medical Association.

style of this paper. But Mrs. H. says that my horses are fast enough and whoever listens to me will be convinced that each horse's pedigree traces directly back to Imported Messenger on one side, and Rysdyk's Hamiltonian on the other).

Just the same I have never failed to read a select amount of the latest and best veterinary literature, but no obsolete works or back number magazines for me, and it has always been my belief that if a veterinarian had to choose between buying a new coat or a new standard veterinary work, he should do without the coat. The coat will come. A veterinarian does not have to depend entirely upon appearances for results. As for myself I seldom blacken my shoes, I usually grease them, and sometimes I smoke a cob pipe.

Still no one can read it *all,* unless he has nothing else to do. Collective veterinary learning is what we need, and how to cure sick animals is what we want to know.

By the way. The other day I was testing a herd of cattle in which were some marked reactors. The owner asked if I had *ever* tested a herd that was clear of reactors. I had to say " No." How many could have said " Yes " Don't all answer at once. To those answering in the affirmative I will set 'em up to some horse powders.

I believe all papers to be read at our meetings should be censored by a special official or committee. Take, for instance, a long-winded technical paper or tuberculosis with endless therometer readings. Now a fact or truth can be told in a very few words, but we are all given to wordiness. (Absolutely nothing personal intended.)

We are in no danger of growing tired of this subject of tuberculosis—we are already tired of it—at meetings, especially when it becomes a big wind.

If anything makes one sick of association meetings, it is the uncomfortable, even painful, toleration of long drawn-out (mind I say long drawn out) papers on thread-bare subjects. The presentation of these kind of papers is a custom, I know, but sometimes customs, like old clothes, should be changed—occas-

ionally. Each member on the programme should be previously informed how much time he can have and no more.

Our worthy Ohio president has suggested an exclusive series of high-class technical papers. It is my little one-horse opinion that the rank and file of us would soon quit coming if that condition should obtain. Let us remain in the wider field and yet do deeper plowing.

A general miscellaneous programme, together with the aid of progressive secretaries who have a practical knowledge of our wants, undoubtedly has made our Ohio State Veterinary Medical Society the success it is.

I am convinced that some veterinary meetings do not make veterinary life. Some papers tend nowhere and that keeps good men from ever coming back. But we must meet and do the very best we can. "Boost" is the word. Let us make our comings together experience meetings, intellectual exchanges.

Again, a society membership helps us in many ways. It is looked upon by most people as a sort of guarantee that the members are pursuing legitimate practice, which is usually true.

But, in regard to a programme of high-class exclusive technical articles. High-class technical articles are alright, but not many of them at a general meeting. It sometimes appears to me as if we had quite enough technical, but not enough practical knowledge. I have known graduates that never saw a horse thrown or castrated. I have known two graduates that could not properly tie a hitch strap. I have been told by students of a school that they are not at all required between sessions to continue their studies and practice with a qualified preceptor.

They claimed that the school, during their attendance, furnished them enough practice properly directed. Such graduates should be subject to the re-call and ought to take a post-graduate course in a livery stable. I pity such graduates, not to speak of their patients.

With no desire to lower ideals, and with the most profound respect for all thoroughly trained, energetic and serious minded

investigators, I still maintain that the world nevertheless needs horse and cow doctors educated in the fullest sense, as well as pseudo-pathologists, blood counters, half-baked graduates and hypodermic syringe zealots. All hail to the mud road, isolated, gum boot country veterinarian!

Did you ever notice how many popular titles a veterinarian has?

I have been accosted as Dock, Quack, Farrier, Veteran, Cow Leech, Hoss Doctor, Vertinary, Venitianary, Vetenary, Old Honesty and Day Light Robber.

And so, my young brother, you should steel yourself never to even turn a hair when you are called perhaps anything from a pepper-corn to a brewer's horse. Of course you might hit the fellow in the "snoot," but that will never get you anything.

Once I was asked by a horse doctor if I had ever studied Dr. Kendall's work on the horse. Astounded at my ignorance, the Dr. (?) further asked if I did not claim to be a Venetian Sergeant.

I modestly admitted I was one and told him I had often heard of him and his skill as a surgeon; I was pleased to meet him, etc.

I finally asked him confidentially if he had ever performed "aortic regurgitation." "Yes, several times," he replied, "and I can tell you it is an awful bloody operation."

You are summoned to a horse that is down, where, if you do your duty, you will get him on his feet. No help can be had. You have the self-locking hoist and sling, but no horse to pull him up. How could you raise him?

Answer: Adjust the sling, back the running gears of a farm wagon up to the door, raise one hind wheel, run the other against side of open door, slip a rail between spokes of front wheels on top of coupling pole, tie rope to a spoke of raised hind wheel, and turn wheel toward you, in this way gradually winding up the rope, and so thus raising the horse. When the horse is at desirable height, push a pole between spokes of hind wheels under the hounds, and this will hold the weight perfectly secure.

Did you ever give a pill to a horse and have the pill lodge and close the epiglottis?

I have had two such accidents and I can tell you the symptoms are alarming, not to say embarrassing. The horse staggers and falls as if shot, stiffens out, eyeballs retract, lips draw tight over teeth, nostrils dilate, and he presents a most painful picture. Now don't get rattled. Just quickly pull out the tongue and push it back several times in quick succession, knead the throat, or, better, open the mouth and push pill back with fingers.

I don't have that choking happen any more. I am sure to wet each bolus before it is given. If no water is at hand I just moisten it with saliva and down she goes.

That precaution, of course, is not according to Pasteur, but extremes may be in any direction, as note the following:

I once tested for tuberculosis the 25 Polled Durham cows of Dean Price of Agricultural Department, Ohio State University. The herdsman required that I thoroughly disinfect each thermometer between each reading for fear of transmitting the disease —only 350 times—which I did without a waver. I admit contagious abortion might be communicated with contaminated thermometers, but tuberculosis by thermometers per rectum—hardly.

I shall never forget my first experience with a stomach tube. That was a long time ago. I had never seen one used and I thought I had the directions down fine. Being of a very modest and retiring disposition, it was but natural that I should not wish to display my first attempt before a critical audience.

One night in my stable there was a large draft mare near her end, and, with the assistance of my wife, I decided to try my hand on this mare at passing the tube. Mrs. H. held the mare and lantern, while I did the operating, so called. I had frequently passed a catheter to the oesophagus, and I thought this tube looked very formidable. Still I thought I was doing very well, for the tube, in passing, presented uniformly little, if any, resistance.

The mare stood stock still, and the tube was about all passed

when Mrs. H. directed my attention to the mare's right nostril, out of which the distal end of the tube was slowly emerging. Almost the entire tube must have been coiled up in the pharynx. The tube was easily recovered with no hemmorrhage, and then properly passed.

Many veterinarians, as we all know, have quite fanciful signs and cards, but here is a card to which I can attest:

RISSIE BOOZEVELDT,
The Boss Horse Doctor.
Keeper of a Jersey Bull.
Hay for Sale. Also Sweet Cider.

And Rissie is no bad kind of a fellow, but he *will* doctor horses. Means well. Rissie no doubt could have broken into some veterinary college ages and ages ago when all that was then called for was a primitive knowledge of the three R's.

Ah me! it's so different now. There can be no healing for such as Rissie. The veterinary profession now requires a liberal education and much mental, as well as manual labor.

Therefore, it is a profession, pure and simple—a real profession, and not, as some consider it, a mere money making device.

In conclusion, I wish to say this little paper is addressed more to the younger members of our profession, who should never lose faith in the great usefulness of the art, or ever think for an instant that their veterinary education is complete,

"For never yet hath one attained
To such perfection, but that time and place,
And use have brought addition to his knowledge;
Or made correction, or admonished him
That he was ignorant of much which he
Had thought he knew, or led him to reject
What he had once esteemed of highest price."

The Wisconsin State Veterinary Society will meet at Watertown in August.

NOTES ON ATTENUATION OF VIRUS IN THE BLOOD OF CHOLERA HOGS TO PREPARE A VACCINE.*

By Robert Graham, Professor of Veterinary Science, Kentucky Agricultural Experiment Station, Lexington, Kentucky.

During the time the specific cause of hog cholera was considered to be the *Bacillus cholera suis,* there were reports of success in immunizing hogs by injecting the attenuated organism, and some practical hog raisers in Kentucky have great faith in this method and prefer it to serum and virus, for no other reason than that it proved successful in their herds in previous outbreaks, as prepared and administered under the supervision of Drs. H. J. Detmers and Paul Fischer, of Ohio, the latter now State Veterinarian of Ohio. We know, however, that attenuation by passing or registering the *Bacillus cholera suis* or virus in the circulation of a horse was not successful, though at times it seemed very efficient.†

Hence this question of a true vaccine for hog cholera, prepared from the *Bacillus cholera suis* and even by heating the virus contained in the blood of sick hogs, is not new. The latter was attempted at the time Dr. Dorset proved the true cause of hog cholera, and even by De Swinetz, his predecessor. Irregular and discouraging results included the attenuation of the *Bacillus cholera suis;* the liquid, dried and powdered cholera blood, by heat and chemicals. So ineffective was the vaccine prepared in this manner that we find no record of their work, for perhaps they have discovered and realized the impossibility of a satisfactory vaccine in the early stages of their investigations, and brought them to a hasty end.

Literature and data relating to this subject, attenuating by heat, are therefore relatively scarce; in fact, entirely wanting,

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* Read at meeting of Kentucky Veterinary Medical Association, February 28, 29, 1912, Frankfort, Ky.

† Bulletin, Kansas Experiment Station No. 157, W. E. King.

but without such records before us it has been generally understood that the preparation of a true hog cholera vaccine from the virus held in cholera blood, by applying heat, was impracticable. The great demand in Kentucky for Dorset-Niles anti-hog cholera serum prompted a few experiments along this line, in that if a successful vaccine could be prepared, we could come that much nearer supplying the demand for immune hogs in our state.

The manufacture of the Dorset-Niles anti-hog cholera serum was not discontinued for these experiments, nor were such experiments carried on in the field, but they were conducted at the laboratory in conjunction with serum production. The two works at times were conflicting, but the few collected experiments on about sixty hogs inoculated with attenuated virus may serve to confirm the unreliability of this procedure or excite criticism by those who have been more successful in producing immunity against hog cholera in swine by this method.

* Drs. Dorset and Niles have recently conducted an experiment including the inoculation of twelve hogs with virus contained in cholera blood, after attenuating one-half hour, at 60 degrees C., which resulted in the death of eleven hogs from acute cholera, the other developing the chronic form of the disease.

** Dr. A. T. Peters, of Illinois, records success by this method; in fact, inoculation experiments include 16,000 hogs, the results of which had not all been received. His work extends into the field as shown by the large number inoculated, at the owners' request, after being advised of the uncertainty of results. His method of attenuating virus consists of drawing off the clear serum from the cholera blood and attenuating at 60° C., for one-half hour. The attenuated product is then carbolized and used in the following dosage:

50-pound pigs, 2 cubic centimetres;
100-pound pigs, 2½ cubic centimetres;
200-pound pigs, 3 cubic centimetres,

and 1 cubic centimetre for each additional 100 pounds.

* Report of Dr. M. Dorset, U. S. Live Stock Sanitary Proceedings, 1911.
** Report of Dr. A. T. Peters, U. S. Live Stock Proceedings, 1911.

The results indicate success in many herds, though the report was very incomplete at the time it was submitted.

* Ulenheuth, of Germany, has published results in attenuating the virus. He states that it is practically impossible to find out the influence of different temperatures on the virus of swinepest: 78° C.-70° C. killed virus in one hour; 58° C. for one hour killed the virus and in some cases it did not; 60° C. for sixteen to twenty-four hours, it lost its virulence; twenty-four hours' heating, 45-46° C., did not lose the power to produce disease.

The following notes and experiments are an illustration of the inconsistency of this vaccine, with conclusions demonstrating that, with our results, it would be unsafe to use under ordinary farm conditions. Many of these experiments have, no doubt, been duplicated by every experiment station interested in serum production, at some other time.

Our technique has been simple, yet what we considered sufficient for attenuating virus in the liquid blood if such were possible. It was as follows, except when designated otherwise in certain experiments:

Technique.—The virus was drawn from the carotid artery under aseptic precautions in advanced cases of hog cholera. The blood so drawn was defibrinated and placed in Erlemeyer sterile flasks loosely stoppered with sterile cotton. The flask was then placed in a luke-warm water bath and gradually brought up to a certain temperature (50-60° C.). Time was recorded from the instant it reached this temperature, and held at this degree for one hour, or one-half hour. The thermometer was placed about one and one-half inches from the surface in the water bath. The Erlemeyer flasks were then allowed to cool in room temperature from one to two hours, and then placed in the ice chest after carbolizing and sealing the container air tight. The virus so heated and cooled was used the same day, unless otherwise stated, in one-half to two centimetre doses, in intramuscular inoculation in hogs weighing from 30 to 125 pounds.

Lack of space prevents us from publishing a detailed account

* Arbeiten a. d. Kaiserl. Gesundh.

of the experiments conducted by Prof. Graham in connection with the above article, on about sixty hogs, including over eighty carefully prepared and lengthy tables, which represent an amount of work that is inestimable.

At the meeting of the Kentucky Veterinary Medical Association in February, Dr. Graham presented this paper in synopsis, covering experiments which had been carried on from time to time at the Kentucky Experiment Station on "The Attenuation of Virus in the Blood of Cholera Hogs."

These experiments involved attenuations, at 50° C., 55° C., 60° C., for periods varying from one-half hour to one hour. In all, as we have said, about sixty pigs were inoculated with these various attenuations. These experiments were not carried into the field, but confined to the experiment station herds.

The conclusions drawn from these inoculations were as follows: "The variation in susceptibility of swine is the seat of irregularity of results in these experiments; as experimentally shown, the amount necessary to protect one hog might be sufficient to kill its mate. Different strains of virus also vary in virulency. It would seem advisable to test the strains by animal inoculation, but this would not give a true insight into the strength of the vaccine in that the test hogs might not be susceptible, and produce a perfect test. Such being obtained would not throw a light on the outcome of its general use, as the question of variation of susceptibility must be considered and ascertained in each herd, and each individual member of the herd, before regular results could be expected.

Conclusion.

"1. Inoculation of attenuated virus at 60° C. for one hour may produce cholera.

"2. Inoculation of attenuated virus at 60° C. for one hour generally does not produce sufficient immunity to protect hogs.

"3. Inoculation of attenuated virus at 60° C. for one half hour generally produces the disease.

"4. That the temperature to which the liquid blood must be heated to produce a reliable vaccine is variable.

"5. The same dose of vaccine may kill, protect or non-protect upon inoculating animals of the same size, under similar surroundings.

"6. Virus so attenuated by heat and not carbolized may retain the properties of original vaccine for at least twenty-four days as far as disease-producing properties are concerned."

THE LEONARD PEARSON MEMORIAL BOOK has just been received from J. B. Lippincott Company, publishers, of Philadelphia. There are a limited number of copies in the hands of the secretary, which can be obtained by addressing C. J. Marshall, Thirty-ninth Street and Woodland Avenue, Philadelphia. Price, cloth binding, $2; morocco binding, $3.

ONE HUNDRED AND THIRTY-FIVE American thoroughbreds exported to Australia last winter were recently sold by auction at Sydney for $89,455, an average of $662. St. Savin topped the sale at $15,000, but some of the brood mares did not bring enough to pay for their transportation.—(*New York Herald*).

C. K. G. BILLINGS is going to ride the trotters Charley Mitchell, 2.04¼; Lewis Forrest, 2.06¼, and Wilmering, 2.12¼, under saddle in Russia this season, and he may drive Uhlan, 1.58¾, and Charley Mitchell to pole. The Billings horses are now safe in Moscow, and Mr. Billings is on his way there. He expects to return in time to see the Cleveland Grand Circuit meeting, beginning July 29.—(*New York Herald*).

NEW BREED OF PET DOG.—Professor Karl Pearson, Director of the Laboratory for National Eugenics in the University of London, exhibited to his associated scientists in a conversazione at the Royal Society a new breed of dog which he calls "pompek."

It is obtained by crossing Albino Pekingese spaniels with black Pomeranians. The offspring are mostly black. The new breed resulted from experiments in regard to heredity.—(*New York World*).

PROTOZOIC STOMATITIS OR SORE MOUTH OF DOGS.*

By Allen A. Foster, D.V.S., City Bacteriologist, Marshall, Texas.

In the preparation of a paper on this subject one must necessarily confine himself to personal observations and experiences, since the condition is not described by any of the various textbooks on canine diseases. This is practically a new disease in this section, as I am unable to trace it back prior to the year 1900, when an entire pack of fox hounds were affected. Since that year it has been constantly with us and many valuable hunting dogs have been lost by its ravages.

While the disease is present all the year, more cases are noticed during the summer months. No particular breed of dogs seem to possess immunity, as it is observed in setters, hounds, pointers, terriers and collies. Occurring more frequently in the order named, perhaps, on account of the fact that setters and hounds outnumber all other varieties. It is observed in the city and the country dog, the hunting and the house dog, the well-kept and the street dog, so it would seem that the different conditions in which dogs are kept do not affect the disease. It is also observed in puppies and very old dogs, so age is not a factor concerned.

This disease is very widely disseminated; especially is this true of the South, and I believe is more frequently found in the marshy sections.

The general symptoms of the disease are of most uniform character and easily recognized. I know of no other disease that could be confused with it. The owner's attention is first attracted by the champing noise made by the jaws, and a delicacy in eating. Seems sluggish and is not playful as usual. Examination of the lips at this stage will reveal a sticky substance adhering to them. Cheeks seem to be hot and painful to the touch, with a very offensive odor from the mouth.

* Read before the Texas Veterinary Medical Asssociation, Fort Worth, March, 1912.

This continues for about twenty-four hours; when the veterinarian is called he finds the same conditions, only more aggravated. The temperature is from 103 to 105 degrees, respiration hurried; strings of this muco-purulent material dribbling from the mouth which seem to be very sticky and adheres to the legs as the animal endeavors to wipe it off. Pulse from 120 to 150 and bounding. On raising the lip we observe a yellowish white film or membrane covering the surface, varying from the size of a hazel-nut to covering the entire surface. Removing this, we see a denuded surface very highly congested, hot and painful to the touch. The openings of the ducts leading from the mucus glands may be easily seen and by holding the membrane for a few seconds the small droplets of the secretion collect at each opening. Ordinarily at this stage of the disease the infection is confined to the mucous membranes external to the teeth. As the case proceeds, the infection extends to the tongue, the pharynx, and sometimes to the larynx. When this latter structure is involved there is a slight cough. As the case proceeds further there is great emaciation, depressed look from the eyes, pulse becomes weaker and often intermittent, respiration slow and irregular, temperature subnormal, diarrhea and dysentery associated with marked tenesmus, membranes of a pale yellowish cast. This stage continues about twenty-four to forty-eight hours, often longer, patient becoming weaker and weaker, and finally dying in coma.

On post mortem we find the blood in long-continued cases to be very thin and watery, while if the case be very rapid the blood usually is dark and clots quickly. The kidneys, intestines and spleen frequently show petechiæ. The general macroscopic lesions vary considerably, so to undertake to outline a fixed and definite picture would be impossible.

There is always found the dark areas covering the infected regions of the mouth which may be accounted for by the tissue changes due to the presence of bacterial toxines at the point of infection.

Microscopic examination of sections made through these

lesions, stained by Jenner's method, reveal the presence of a protozoic infection of the mucus glands, which is associated with pyogenic streptococci. These are found in the glands themselves and also in the tubes near the surface. I have also found them in small numbers in the muco-purulent exudate. These parasites invade the mucus glands as the *Dermodex folliculorum* invade the sebaceous glands, and likewise are associated with pyogenic infection. My experiments thus far do not permit me to attempt to classify the protozoa; however, I will describe it as best I may. I find them to be actively motile, possessing a movement indicative of bi-polar flagella, reproduce by simple division, will grow on artificial media, presence of chromatin granules, non-sporulating, 10 m. in diameter, 40 m. in length; stained specimens from pure cultures frequently appear as crescent shaped on account of their movement; stain with any of the aniline stains; easily demonstrated in tissue sections stained by Jenner's method of staining protozoa; shape resembling a grain of barley; injected into the mucous membranes of healthy dogs will produce the disease, from which it may be again obtained.

Granting that this is the etiological factor in sore mouth, the next great question arising is the successful method of treatment. Since my experience has led me to conclude that the general systemic disturbances are produced by the absorption of the toxic products of the parasite and accompanying pyogenic bacteria, I have directed treatment along that line.

About the first thing I do to a case is to flush out the bowels with cold enema of normal salt solution, which reduces the temperature and assists in the elimination of the toxines already absorbed. Next I remove all mucus and diphtheritic membranes with cotton and inject into the mouth full strength of hydrogen peroxide, which cleanses the surface and opens up all mucous ducts, thereby allowing free escape of any retained toxines. I then give a dose of bacterin made from the associated pyogenic organisms. I continue the peroxide treatment three or four times a day and the enema as often as necessary to keep the temperature down. If the general symptoms indicate the need of stimu-

lants or heart tonics I use them, otherwise I give no medicine except intestinal antiseptics, preferably the sulpho-carbolates. Forced nutrition in the form of small balls of ground meat, beef extract and eggs are all essential to the treatment. The mortality in cases reached in the early stages rarely exceeds 15 per cent. If the diarrhea develops, starch and opiates may be given as an enema.

Summary.—A protozoon disease, produced by an unclassified organism invading the mucous glands of the mouth, associated with pyogenic streptococci. Systemic disturbances produced by the absorption of the products of the two organisms and death from toxæmia. All dogs are subject to the disease and one attack does not confer immunity.

NOTE—There are many things concerned with the organism that remain to be worked out. I am calling it a protozoa, however, this remains to be proven. I only offer these few findings in advance in order that I may be instrumental in causing others to work along the same lines. I am thereby obtaining the facts in connection with this much dreaded Southern disease of dogs.

The Alpha Psi Fraternity recently installed two new chapters, the seventh and eighth of the group.

The Eta chapter was installed in the Division of Veterinary Medicine of the Kansas State Agricultural College, at Manhattan, on April 5, 1912, by Dr. H. E. Kingman, of Fort Collins, Colo., president of the National Council. The chapter was started with eight active members and four honorary members, Drs. Schoenleber, Burt, Dykstra and Rogers of the Faculty. The constitution and the by-laws of the Eta chapter make scholarship of paramount importance as far as eligibility to membership is concerned.

The Theta chapter was established in the College of Veterinary Medicine of the Alabama Polytechnic Institute, at Auburn, on April 5, 1912, by Dr. A. M. Jansen, of Columbus, Ohio, treasurer of the National Council. He was assisted in the installation ceremonies by Dr. D. J. Meador, of Selma, Ala. The chapter organized with twelve active members and three honorary members, Drs. Cary, Hallman and Howell of the Faculty.

REPORTS OF CASES.

AN OBSCURE CASE.*

By I. B. Irwin, V.S., Stonewall, Can.

My reasons for the rather peculiar heading given to this paper and my object in writing an account of the following case are: First, it is amongst the most interesting that I have had the satisfaction of watching, and, second, since I am unable to account for the symptoms shown or to find a known cause for them I have written these lines hoping there may be some members present who have seen cases of a similar nature, and if they know the cause will give us the benefit of their experience.

In the afternoon of July 17, last, a telephone message came to our office stating that a cow owned by a party at the other end of the city had taken suddenly ill and required treatment at once. I was unable to get any symptoms of the case over the 'phone, as a neighbor had sent the message, so taking such medicine and instruments as I thought necessary, started at once for the place. On arriving I found a dark red Jersey cow of medium size and fairly good condition and from outward appearances looked to be of a good milking strain. She had calved about two months previous and had been milking well since, having spent the summer in the pasture.

I found her standing in a small field where she had been pasturing for the last few weeks, and on one side of this field were some vacant lots, now used as a public dump, and to this she had access.

The boy who came with me to the field told me that she had been having dizzy spells all day and that she would begin walking around in a circle getting faster and faster steadily until finally she would fall, when she would lie for about ten or fifteen minutes, when she would again get up and apparently be all right for perhaps an hour, when another dizzy spell would come on as before and she would fall again. She had been having these spells since about 9 o'clock in the forenoon. On examina-

* Presented to the Veterinary Medical Association of Manitoba, Brandon, March, 1912.

tion I found the muzzle dry; the eyes dull looking; the temperature 103.4; pulse about 65, and respiration about 25. She would move around without any difficulty; showed no nervousness; walked steadily and without any evidence of pain or discomfort; mucous membranes appeared normal.

I waited for about half an hour hoping to see her in one of these attacks, but, being disappointed in this, I had her taken to the barn (as the day was quite warm and there was little shade where she was standing). She walked to the stable quite easily and there I gave her a drench consisting of:

℞. Ol. Lini., 1½ pts.
Ol. Turp., 1 oz.
Chl. Hydrate (50% solution), 2 oz.

She swallowed this drench readily and I left, asking them to 'phone her condition in the evening and saying I thought the trouble was due to her eating something that did not agree with her.

We were again called by 'phone about 6 p. m., and were told that the cow had had two other attacks since I had been there and was little, if any, better.

My father having got home by this time, we both went on this visit and found her coming out of another spell. She was lying in a comfortable position in the barnyard (we were told they found it impossible to keep her in the stable during the attacks and had let her outside where she would have more room). Her condition appeared much as in the afternoon, except her pulse was now about 70 and she looked considerably more haggard. My father had the same history of the case that I had and also considered the trouble due to something she had eaten. We now gave her a hypodermic injection of strychnine sulphate and digitalin and waited for about 20 minutes in the hopes of seeing her in one of these spasms, but, as before, none came on. At this time my father had to go on another call, saying he would call for me in about two hours and left me to watch her, and instructed me, if no attack came on, to repeat the dose of strychnine and digitalin in an hour.

I waited for about an hour and ten minutes and, seeing there was no indication of another spasm coming on, prepared the second dose, and was just on the point of giving it when I noticed her begin to step around in her stall in a rather uneasy manner. Her eyes began to roll, and breathing become hurried and labored; suddenly she made a rush backward breaking the

rope with which she was tied; every muscle in her body appeared to become contracted. She circled backward with limbs so stiff that she seemed utterly incapable of either bending them, or using them as a means of balancing herself, and without the least idea of steering, went fiercely in a backward direction, her fore limbs going faster than her hind, and neither one seeming to be able to keep up with the body. She made almost a complete circuit of the stable floor, overturning barrels, boxes, bags and everything with which she came in contact, finally falling on her broadside quite near the place from where she started.

She lay rigid for some minutes, her two upper limbs standing out straight, and could not be flexed; muscles quivering; her eyes bulged out and showed some reflex action when touched. Her heart beats had now gone up so high that they could hardly be counted, and were hard and strong; breathing fast and labored.

She lay in this condition for about fifteen or twenty minutes when her muscles gradually began to relax; her limbs to flex, and eyes to blink when light was near them. In about another half hour she regained her natural recumbent position, her heart and respirations having become greatly improved.

The boy who was with me said he had not seen her have one as bad as this before, but that they had all been of a similar character, and that she had got over them quicker.

Thinking that the strychnine we had given her previously had been more of an aggravation than a cure, I withheld repeating the dose and reported the whole matter to my father who arrived a few moments later.

We now decided to give reverse treatment and, after making sure that she was able to swallow, gave her a drench containing

℞. Chloral Hydrate, 1½ oz.
Potassium Bromine, 2 oz.
Ol. Lini., 1 pt.

In another half hour, finding her still comfortable in the same position, we left for the night, leaving another drench about half the dose of the last, to be given if any further spasms occurred. Gave an unfavorable prognosis and asked the owner to report the condition in the morning.

We heard nothing further of the case until about 4 o'clock the next afternoon when we were again 'phoned, saying the cow had got up about four or five in the morning and had eaten a

little bran mash, about six she had had another very mild attack when they had given her the medicine we had left, and wished to know how they had better treat her now.

We could hardly believe the report, as we had given up hopes on receiving no word from her in the morning. We now went over to see the case again and found her standing quietly in the stable. Her bowels had operated freely during the day and she had had no other attacks since morning. Her pulse, respiration and temperature were practically normal and with the exception of a few external bruises and a rather gaunt appearance, there was nothing to mark the previous days experience.

She was kept in for the next day and fed on grass and a few doses of condition powders in bran mashes. The next day she was put back in the pasture apparently as well as ever.

I heard nothing further about her until about the latter part of September when I met her owner, and he told me that she had been in good health all summer, and had never shown any signs of another such attack.

ENTERECTOMY AND ANASTOMOSIS OF THE INTESTINE OF THE DOG.*

By STANLEY T. MARTIN, V.S., B.V.Sc., Winnipeg, Can.

This operation while common in the practise of human medicine is not made use of to any extent in canine practise. In certain cases, as of foreign bodies or where a bowel has become injured and gangrenous, the only chance of saving the animal's life depends upon the excision of the diseased portion and the union of the cut ends. Our chief difficulty seems to be the making of a correct diagnosis soon enough, that is before the patient has become exhausted or septic peritonitis has set in.

Within the last few months I have had the privilege to assist in the performance of this operation on a few dogs simply as a clinic with excellent results; of course, it must not be forgotten that these animals were comparitively healthy and not suffering from any disease of the intestine.

The first animal operated on was a large fox terrier, the preliminary preparations were the same as any abdominal operation, starving for 24 hours, etc., the dog was placed on the operating

* Presented to the Veterinary Medical Association of Manitoba, Brandon, March, 1912.

table and chlorformed, the abdomen was shaved and thoroughly disinfected. An incision was made in the median line and the bowels exposed. A sterile piece of gauze with a hole in the centre was taken and laid over the wound, the portion of bowel to be removed was then pulled through the hole, this gave a clear field for operation, as well as preventing blood, etc., to leak back into the abdominal cavity. The contents of that portion to be incised were forced back about 1 inch above, and below, and the bowel clamped, this can be done either by tying with a tape or by rubber bands. All branches of the mesenteric arteries that supply the region to be ligated. The bowel was then severed with a pair of scissors, taking along with it the mesentery that was attached.

There are two ways in which the bowel can be united, 1, end to end or 2, parallel; in this animal we used the parallel method. The cut ends of the bowel were first sewn up, this was done by running a purse string suture around the end and tying, the ends were tucked in and the serous coats brought together by interrupted sutures. The two ends of the bowel were now laid parallel to each other, and the serous coats sewn together, an incision was made in both portions of the bowel about an inch long and the adjacent mucous coats brought together and united by sewing the serous coats. The bowel was cleansed and warmed by covering with a hot towel, then placed back into the cavity and the wound closed by sewing both muscle and skin with one suture. Care must be taken that the cut edges of the mesentery are brought together, else a portion of the bowel might pass through and become strangulated.

This animal was kept warm and quiet, fed milk for the first few days, the external wound was kept clean with a weak antiseptic solution, at the end of the first week the animal had regained his normal spirits and to all appearances made a good recovery. Three weeks after the first operation we again chloroformed him, opened up the abdominal cavity, removed another portion of bowel and united it by the end to end method; this is done by bringing the ends together and passing a suture through the muscular and serous coats till the bowel is united. The drawback to this method is that often a stricture results at the point of union.

This animal we destroyed and found the results of the first operation to be excellent; the two portions were entirely united and only a few of the stitches could be seen.

The second dog was operated on in the same manner, the bowel united by the parallel method. This dog to all appearances made a good recovery.

The third dog I operated upon myself, removed about 6 inches of the bowel and united it by the end to end method. This dog to all outward appearances made a good recovery. One month after the operation the dog was destroyed, and the portion of bowel operated on removed. When severing the bowel I found that it was full of string and rubber bands which had become attached to the mucous coat at the point of union, these the dog must have eaten before being operated on.

A MONSTROSITY.

By A. D. HUBBELL, M.D.C., Los Angeles, Cal.

The sire of this colt is a standard bred trotter and also the dam. The colt was entered in all of the Pacific stakes, but as we could not put on any front legs she was withdrawn. She

had no signs of a scapula on either side, and the sternum back as far as the navel was open, so you could see all of the organs working. She lived for five hours and then the owner destroyed her.

AZOTURIA.

By S. J. Alcolay, D.V.M., Le Sueur, Minn.

The fact that two gentlemen have written on the subject of azoturia in your last month's issue is sufficient proof to believe that this is the season in which this malady is made more manifest than in any other season of the year.

I agree in every word these gentlemen have said concerning the treatment. Their ways of dealing with this disease and their therapeutic measures are almost identical.

I wish to describe my way of curing this disease. I had more than one horse to treat, and of either sex. I am pleased to say that I saved every one of them by following a very simple procedure and by using the cheapest available drug; also, slings were not used.

I shall ask the favor to have room in your valuable Review, wide enough to state two of the worst cases I treated.

First Case—John Nocker comes to town with his team of horses to have them shod. He drove a few miles from his house to our village, bound to the blacksmith shop. His off horse all of a sudden acts as if he had stringhalt. He lifts up his left hind limb, as high up as to reach the abdomen, makes a jump while the leg is hanging, and in this way advances by making some short strides. It took us about ten minutes to bring that horse from the blacksmith shop to the stable, a distance of about 20 rods.

John was much alarmed. His means are very limited. Symptoms: No sweating at all. John claims the horse has sprained himself while crossing the bridge. I was educated by our worthy dean, Dr. White, that quite often a farmer will rather mislead the veterinarian by giving the anamnesis of his case. So I was at a loss. It could not be stringhalt as the horse could make no use of the leg at all, while in stringhalt the horse is able to bear weight on the afflicted limb. The horse had not been overfed. John said he only fed him two quarts of oats a day.

But this was Monday; the horse was looking at his sides; eyes dusky brown; there was some manure in the rectum, the bladder moderately full.

Diagnosis—Azoturia.

Treatment—At 11 a. m., one quart linseed oil to one-half ounce turpentine, given in two doses one hour apart.

Hot fomentations over the loins and the paralyzed leg every hour.

At 3 p. m. gave Pot. Nitrate, 4 oz.; Fld. Ext. Nucis Vomicæ, 3 drams; Water sufficient. Sig., one cupful every hour.

At 6 p. m. the horse had not made water. One ounce of sweet spirits of nitrous ether was given. At 9 a. m. the next day the horse began to use his leg. Some blister ointment has been rubbed on loins and joint, this very sparingly. At 6 p. m. the same day the horse was fine. In three days the horse was at home.

Second Case—A neglected case of azoturia treated by a licensed Dr., deserving rather the title of quack.

I used saltpetre and nux vomica as in the above prescription, 2 ounces a day for six days. The horse responded to the treatment after he had two pounds of saltpetre.

Let me hear some encouragement or criticism from some brother veterinarian.

A Six Horse-Power Horse.—A correspondent of a French newspaper desiring to ascertain the actual strength of a powerful horse, visited several of the stables that use the finest horses in Paris, selected an eight-year-old Percheron which for three years has been engaged continually in hauling cut stone for building purposes. He tested the animal and it was able to haul a block of stone weighing thirteen and a quarter tons, placed upon a car that weighed four and a half tons, making a total weight of seventeen and three-quarter tons. This is a task to which six horses would ordinarily be put.

Records on file in the Bureau of Veterinary Service, New York State Department of Agriculture, show rabies quarantines to be in force in nine towns and one incorporated village of that State. Veterinarians, health officers and members of boards of health are earnestly requested to report at once to the Commissioner of Agriculture all cases of rabies or suspected rabies coming to their attention, so that prompt and effective action may be taken to control the disease.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

EXCEPTIONAL CASE OF EQUINE TUBERCULOSIS [*S. B. Vine, M.R.C.V.S.*].—Aged seven years, this bay mare had congestion of the lungs, which was treated with stimulants and tonics. Two days later began the appearance of several buds along the lymphatic vessels of the abdomen, chest and hind legs. Malleined, she gave no reaction. The buds increased in number all over her body, ripened and discharged ordinary pus. Treated for pyemia, the animal was soon covered with numerous abscesses. Some were quite large. Some thirty of these were opened one morning. Treated with tonics, stimulants and antiseptics, the animal improved some for a while but soon returned in her bad condition. She was destroyed. Post mortem showed a spleen with three caseous masses; the liver was also diseased and miliary tubercles were present in the lungs. The lymphatic glands of the mesentery, the abdomen and the bronchia were exempt from disease. In the heart the auricles were found ossified. The examination of the lesions found them to be tuberculous in nature.—(*Vet. Journal.*)

FOREIGN BODIES IN DOG'S THROAT [*J. Basil Buxton, M.R.C.V.S.*].—Records of three different cases observed by the author. In one a fox terrier dog had a swelling as big as an orange which had developed in the region of the left submaxillary gland. Explored with needle, it gave issue to blood-stained serous fluid. Opening enlarged and the cavity explored, a sharp point was felt. It could not be removed with forceps, but finally, by being pushed from outside into the cavity, a large tin tack was extracted. Recovery followed.

In a second case a full-grown collie had a swelling in the intermaxillary space. It contained sero-sanguineous fluid and small quantity of pus. Nothing was detected in the cavity of this abscess until a week later, when on second examination a hard, wire-like substance was detected. It had to be snapped for removal. It was a darning needle with thread.

With the third case, a black pug puppy, it was a hard substance felt on the left side of the neck with the point pushing under the skin. The body extracted proved to be a lady's ordinary black-headed hatpin, 10 inches long. The puppy measured only 12 inches from the angle of the jaw to the root of the tail.—(*Ibid.*)

HYSTERECTOMY IN AGED BITCH [*J. Stewart Wood, M.R.C.V.S.*].—This slut, nine years old, presents symptoms of purulent metritis and immediate removal of the womb is advised. Morphia is administered and chloroform after. The abdomen open exposes the bladder full of urine and ready to protrude. It is emptied with needle. The two horns are much distended and they are with difficulty drawn through the abdominal wound. The body of the uterus is ligated and both horns, attached to the stump of the uterine body, are removed with the ovaries. The abdominal wound is closed with catgut and the skin with silk sutures. The animal, exceedingly weak, was placed in a "Rogers veterinary brooder" (an incubator, I suppose), and kept comfortably warm. The wound healed rapidly and complete recovery took place in ten days.—(*Vet. Rec.*)

AN INTERESTING INGUINAL HERNIA [*W. Jamieson, M.R.C.V.S., and Prof. F. Hobday, F.R.C.V.S.*]—Six-year-old Yorkshire terrier bitch, weighing three pounds when four years old had a swelling the size of a walnut in the left groin. This has enlarged and now is as large as a goose egg, almost touching the ground during progression. The hernia is quite irreducible, and even when chloroform is administered it was with difficulty that the contents could be returned in the abdomen. During the careful manipulations required, a small hole was made in the sac. The contents were the uterus, the intestine and a portion of the intestines. They were returned in the abdomen. A ten-day catgut ligature was applied to the base of the sac and several sutures applied round it to strengthen it and close the canal. The skin was sutured with silkworm gut and the wound treated antiseptically. Uninterrupted recovery followed.—(*Ibid.*)

PARALYSIS BY MELANOSIS [*Fred G. Edwards, F.R.C.V.S.*].—Ten-year-old gray hunter gelding becomes lame on the near foreleg; walking sound, he drops on a trot. With time the lameness increases and then the horse went lame walking down hill;

then he stumbled, moved sideways and became dangerous to ride, as occasionally in cantering he would lose power of his near fore, would nearly fall and saved himself with great trouble. He afterwards developed roaring. His upper lip was observed twisted to the off side. The near eye was more closed than the off. The near ear lopped down. The shoulder muscles grew atrophied. He dragged the near hind leg and knuckled over the fetlock, until finally the entire near side became partially paralyzed. Destroyed, melanotic deposits were found over the coverings of the cerebellum and in the tracheal, bronchial, iliac, pharyngeal, prepectoral and submaxillary lymphatic glands. The treatment had consisted in the administration of arsenic and iodide of potassium.—(*Vet. News.*)

ANTI-STREPTOCOCCAL SERUM [*E. Alfred West, F.R.C.V.S.*].—Four-year-old colt recently bought is off his food and has a temperature of 104° F. He is treated by the stable superintendent, but his appetite leaves him, his temperature rises to 105°, the visible membranes get yellow, and then laminitis of both fore feet takes place. Lungs are healthy by auscultation. Treatment poultices of the feet, salines, salicylate of soda, digitalis and quinine. No change takes place for four weeks of that condition, except two or three small abscesses of the submaxillary space. Streptococcal infection is diagnosed. Two doses of anti-streptococcus serum are obtained and given one after the other at intervals of forty-eight hours. The effect was magical. "The temperature which for five weeks had ranged from 105° to 106° dropped twelve hours after the first injection to 102°, and two days later, or twenty-four hours after the second injection, to normal, the lameness disappeared and the appetite returned. In a week the patient was well."—(*Vet. Rec.*)

INVAGINATION OF THE STOMACH AND SPLEEN IN THE ŒSOPHAGUS [*W. Pauer, M.R.C.V.S.*].—Two-year-old Newfoundland dog had gastritis with frequent attacks of vomiting. This last seems to have become a habit with him. One morning he was found dead in the kennel. *Post mortem:* Stomach was first looked for, as poisoning was suspected. It is not found in the abdomen. In opening the chest and exposing the heart and lungs, "a large cylindrical swelling was observed; it was the œsophagus with the stomach turned inside out and the spleen inside it. The stomach was black from strangulation and so much swollen that it could not be withdrawn by traction. The

entire œsophagus was removed and slit up. It measured four inches at the pharyngeal end and nine and one-half inches at a distance of ten inches from the cardiac end, where it again measured four inches."—(*Vet. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

OLD LACERATION OF THE SPLEEN BY KICK FROM A HORSE [*Mr. Vigo, Army Veterinarian*].—Four-year-old stallion is noticed sick at 5 o'clock one afternoon. He shows great prostration, staggering walk, cold extremities, abundant cold sweat all over; he is pulseless and the mucous membranes are pale. Dyspnea is much marked. Left in a box, he lays on the right lateral decubitus. Internal abdominal hemorrhage is diagnosed and death takes place after two hours. The lesions found at post-mortem can be recognized as recent and old. Among the first, spleen is found very large and black. The external capsule is separated from the splenic tissue and torn in its entire posterior face. It covers a thick clot. The edges of the tear are not inflamed. The abdomen contains all the blood of the body. There is an enormous clot. The old lesions are indications of traumatism by kick. They are two or three months old. The sixth, seventh and eighth left ribs, the lungs and the spleen are involved. The seventh rib is fractured, so is also the sixth. There is pneumonia localized at the seat of injuries of the ribs. The pleura is thickened. The splenic lesions consist in a bloody pouch as big as the fist, with walls two centimetres thick. It has two open spots imperfectly closed by organizing clots of blood. They were the constant threatening lesions of the fatal hemorrhage, which finally took place.—(*Rev. Gen. de Med. Vet.*)

CEROMYOMA OF THE ŒSOPHAGUS IN A HORSE [*Mr. Bonnigal*].—Old twenty-two-year-old draught horse has never been sick except an attack of pharyngitis ten years ago. Suddenly his appetite is gone. Carefully examined, no indication of sickness is detected. Soon, however, as a drench is given to him, he is taken with spells of choking, general tremblings, cold sweats. Diagnosis is uncertain and, taking in consideration his age and his good, fat condition the owner sends him to the

butcher. *Post-mortem:* All the organs are healthy except the œsophagus, which is much enlarged, but the red striated muscle of that canal is continued to the cardia by a very hard enlargement, elongated from forwards backwards and between the superposed muscular layers there is an elongated, whitish, hard tumor, as big as the finger and measuring six centimeters in length. With the appearance of a lymphosurcoma, the microscopic examination classes it as a ceromyoma.—(*Presse Veterin.*)

Total Absence of Teeth in a Dog [*Prof. Dechambre*].—This was observed in the skull of an English toy terrier, thirteen years old, which died with a paralytic stroke. During life the buccal cavity has been noticed as being toothless. There was on the palatine arch two bucco-nasal fistulæ. The skeleton showed no trace of teeth nor of alveoli on the superior maxillary. The crest which ordinarily is formed by the insertion of the molars did not exist. The branches of the lower maxillary were not united and showed no indication of the bony support for the incisive arch. There were, however, three small depressions as aborted dental alveoli. The two maxillary halves were incomplete and partly atrophied. The animal had lived to old age because of the great care he received. His food consisted of milk soup and sometimes of crushed cooked liver mixed with soft bread.—(*Bull. de la Soc. Cent.*)

Rupture of the Primitive Aorta [*A. Esclanze, Army Veterinarian*].—Mare, of seventeen years, jumps a bar in a *ménage,* gallops for some fifty metres, staggers, falls and dies in a few seconds. Internal hemorrhage is the cause of death. At the post-mortem, the pericardium is found considerably distended by an enormous blood clot which has evidently produced the syncopal arrest of the heart. A bloody mass surrounds the base of the aortic trunk, and under it is discovered a transversal rupture of the primitive aorta, four or five centimeters long, just above its starting origin from the left ventricle.—(*Ibid.*)

Fractures of the Base of the Cranium [*Major Veterinarian Berton*].—1. Thoroughbred mare of ten years, nervous and difficult to ride, drops suddenly on her hock as the saddle is put on her; she partly falls and knocks herself against a wall. She lays down motionless for a few moments, has some con-

tractions of the legs and dies. At the post-mortem some cutaneous excoriations are found over the left zygomatic process with wide ecchymotic spot in the cellular tissue under. The occipito-spheno-temporal hyatus is the seat of an hemorrhagic exudation extending to the ethmoidal volutes and the maxillary sinuses. The cranium is extensively injured. On the left basilar region there are two fractures, one on the spheno-temporal suture, involving the sphenoid and extending to the cribriform plate of the ethmoid, the other involving the sus-sphenoidal duct.

2. A thoroughbred, fifteen years old, pulls back on the halter and falls backwards. The fall is sudden and hard, the horse striking heavily on the pavement. The animal remains motionless, has clonic contractions especially on the forequarters, the palpebral reflex is gone, the pupils dilated, and blood is escaping freely from the nostrils. There is only a small cutaneous abrasion back of the orbit. The condition is so severe that the animal is killed. The autopsy revealed bloody extravasation under the cutaneous erosion, subperiosteal ecchymosis over the zygomatic process, some splinters of bone over the foramen laceration. After boiling of the skull, two fractures of the cranium are detected. One transversal complete, comminuted from the basilar process to the carotid notch and pterygoid process. The second comminuted also back of the posterior angle of the right foramen lacerum.

These two observations show that a fall on one side, a bruise of the temporal region, may be accompanied with accidents of very various severity, from the simple cerebral commotion to most extensive disorders of the cranium or of the brain.—(*Bull. de la Soc. Cent.*)

CARDIAC LESIONS IN A HORSE, WITH "ANTE-MORTEM" FIBRINOUS CLOTS [*Mr. A. Bel. Army Veterinarian.*]—This subject was twelve years old with uninteresting history. For several months his general condition was poor, he was unwilling to work, and had frequent swellings of the posterior extremities. Auscultation of the chest had revealed nothing except that the beatings of the heart sound more metallic and show a double noise at the second beating. These manifestations grew more severe until one morning he died suddenly.

Post-mortem: Abdominal cavity shows a serous, yellow, bloody exudate without inflammation of the peritoneum. Spleen, kidneys and liver about normal. Thoracic cavity shows emphy-

sematous lungs, no hepatization. Percardium about normal. On the surface of the heart there are œdematous lesions along the cardiac vessels. The myocardium is soft, yellowish and easily torn. In the right cavity of the heart there is a well-marked *ante-mortem* clot, weighing 65 grammes, organized, hard, yellow on one face, red brown on the one which is exposed to the current of the blood. It is inserted in the bottom of the auricular cavities, passes through the auriculo-ventricular opening and extends to the lower part of the ventricle. It has some bands which secure it to the tricusped valve; one runs as far and into the pulmonary artery.

On the left side of the heart there is another clot with the same general characters. It is smaller, more conical, and ends into the aorta by a floating free point.

Transversal sections of these clots show the stratified disposition explaining the progressive development of the clots and the deposit of successive layers on their free surfaces. The endocardium of the two cavities was discolored. The endothelium of the large blood vessels and the valves were without rugosities or vegetations.—(*Journ. de Zootchnic.*)

THE HORSE STANDS PAT FOR CITY TRUCKING.—The Adams, American and United States Express Companies recently placed an aggregate order for one thousand horses with the Fiss, Doerr and Carroll Horse Company, of New York, averaging sixteen hands high and weighing about 1,200 pounds. And some people would have you believe the horse is "going out" for city trucking.

CORRECTIONS.—On pages 117 and 118 of the April issue the following errors occur in the report of the meeting of the Missouri Valley Veterinary Association at Kansas City: Thirty-three head, should read *thirty-two: one* gave incorrect readings, instead of three; hence the percentage of correct results by the subcutaneous method should read 97.77 instead of 93.47, while the percentage of incorrect readings should be changed from 6.52 to 2.22. The REVIEW published the above strictly according to copy, not knowing that the figures were not correct.

ARMY VETERINARY DEPARTMENT.

THE STATUS OF THE ARMY VETERINARY BILL.

The bill, H. R. 16843, was amended and favorably reported by the House Military Committee on April 26, and provides, briefly, as follows: For the appointment, by the President, of veterinarians and assistant veterinarians not to exceed two for each regiment of Cavalry and Field Artillery, fifteen as inspectors of horses and mules and as veterinarians in the Quartermaster's Department, and five as inspectors of meats for the Subsistence Department, not to exceed sixty-two in all. A candidate for assistant veterinarian must be a citizen between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and shall pass required examination. Such assistant veterinarian shall have rank, pay, and allowances of second lieutenant mounted; after five years of service be promoted to rank, pay, and allowances of first lieutenant, mounted: Provided, That he passes satisfactory examination for mounted service; or, if found deficient, he shall be discharged from the Army with one year's pay and have no further claim on the Government. Sec. 4 provides that the veterinarians of Cavalry and Field Artillery now in the Army, together with such of the veterinarians of the Quartermaster's and Subsistence Departments provided for in Sec. 1 of this act, now employed, who at the date of the approval of this act shall have less than five years of service, be reappointed and commissioned as assistant veterinarians with rank, pay, and allowances of second lieutenant, mounted; veterinarians who have over five years of service be reappointed and commissioned as veterinarians with rank, pay, and allowances of first lieutenant, mounted: Provided, That they pass a prescribed practical professional examination and a physical examination as to fitness for mounted field service: Provided further, That veterinarians now in the Army, and in the employ of the Quartermaster and the Subsistence Departments who fail to pass the prescribed physical examination, due to disability incident to the service, and who have been incapacitated from rendering satisfactory service to the Government, shall be retired from active service

with seventy-five per centum of the pay corresponding to length of service as prescribed herein. The bill also provides for reserve veterinarians, who shall have pay and allowances of second lieutenant, mounted, during period of service and no longer. Candidates for assistant veterinarian are to pass the examinations as appointed in order of merit, to vacancies as they occur, such appointment to be a probationary one of six months, after which time, if the services of the probationer have been satisfactory, he shall be permanently appointed, with commission antedated to embrace such probationary service. Probationary veterinarians whose services are found unsatisfactory shall be discharged at any time during the probationary period or at the end thereof, without further claim against the Government.

The House Committee on Military Affairs, in reporting the bill to the Committee of the Whole House, says: Your committee, after giving this bill very careful consideration, is of the opinion that it should pass in the interest of the efficiency of the service.

On March 23, 1912, there were employed in the Army 69 veterinarians. The substitute bill provides for 62. The present cost of this service is $141,174.90. The cost under the proposed substitute bill will be $172,551.16, a difference of $31,376.26 per annum. All this bill does is to give rank to the veterinarians, which they do not now have, which is in line with the practice of other countries.

It is thought that it will greatly improve the service to give the rank provided in this bill, and in that way much money will be saved by virture of increased efficiency in this service. The veterinary surgeons of this country are a body of highly trained and intelligent men who have made and are making great strides toward progress in their profession, and it is not reasonable to expect that the government can secure the best talent of the profession unless some fitting and substantial recognition is given to it.

The principal changes effected in the amended bill are the omission of the position of the chief veterinarian, of the purchasing officer of veterinary supplies and of the veterinarians with the rank of captain, as recommended in the original bill. The Military Committee of the House made these reductions in ranks to meet the objections of the War Department. As a consequence, if this bill becomes a law, the army veterinarians will not constitute a corps proper; again a victory for the War

Department, which has since long objected to the formation of a veterinary corps. However, the number of veterinarians has been increased from forty-two to sixty-two by the consolidation of all those serving in the line, in the Subsistence and Quartermaster's Department, and as all these veterinarians will be, in the future, officers of the Army, a united body of some strength will at least be created, who's better unity, self-reliance and influence should lead to a greatly increased efficiency of the Army veterinary service. There can be no doubt that this first and loosely constituted veterinary body is the forerunner of a properly organized Army veterinary corps in our Army.

In order to have this bill become a law, it is now imperative that the hands of Chairman Hoskins be strengthened for his work in the Senate, where he seems to fear a greater opposition than he found in the House. This bill *must* become a law at this session, or an enormous amount of energy will have been wasted and large expenditures been made in vain. Furthermore, it may be possible for Dr. Hoskins to save, by compromise in the conference committee, some of the omitted positions as originally recommended.

It is to be regretted that the favorable and liberal report of the Committee on Military Affairs of the House is spoiled by the very faulty reports on the organization and ranks of the European army veterinary corps embodied therein, which, in a large measure, were accepted as models by our Congressmen. These reports were evidently furnished to the Congressional committee by the War Department. They are from ten to twenty years behind the times, and so poorly translated and pregnant with mistakes as to give an entirely erroneous impression. If the War Department, instead of relying on the reporters and translators of the general staff, would have accepted the similar reports as made in the brief to our bill, which are up to date and correct in every respect, perhaps some of the old prejudices against veterinary matters in our Army might not have come again to the surface during the recent Congressional consideration of our bill. This phase alone shows how little our military authorities are interested in veterinary questions, for it is well known that they are thoroughly posted on all other matters of foreign army organization and improvement. Evidently, then, the War Department needs a chief veterinarian as much as it needs any of the other chiefs of bureau, because they are naturally interested and keep themselves well informed on all im-

provements at home and abroad, and can always furnish correct and timely information when needed. But the mere idea of a chief veterinarian seems to remain abnoxous to the powers that be in this department of the U. S. Government. O. S.

THE RECAST, MODIFIED FORM OF THE ARMY VETERINARY BILL FAVORED BY THE MILITARY COMMITTEE OF THE HOUSE OF REPRESENTATIVES.

We present below a reprint of the recast, modified form of the Army Veterinary Bill (H. R. 16843), which is favored by the Military Committee of the House of Representatives. Much legislation is in the nature of a compromise, and the bill here printed is the one which is not only favored by the Military Committee, but also by the Quartermaster General of the army, who approves of the measure in its new form. This is important, as the understanding is that all veterinarians of the army will be attached to the Quartermaster's Department. It is too early to make too definite statements based upon legislation which is still in the making and which has not reached finality. This bill may be further modified and, we hope, improved by restoring certain parts of the original bill, before the measure reaches the President's hands for approval—that is, in the Senate committees, on the floor of the Senate, or in the conference between representatives of the Senate and House. Nevertheless, some of the main features of the recast may be pointed out:

1. No chief veterinarian is provided for.

2. Rank and commission of first lieutenant is given, but no captaincies.

3. No specific mention is made of the various offices mentioned in Section 1 of the original bill—veterinarians as instructors in remount depots, as purchasing officer of veterinary supplies—except the number for each part of the service where veterinarians will do duty, with the regiments, in the Quartermaster's Department, in the Subsistence Department.

4. Fifteen veterinarians are provided for the Quartermaster's Department. A total of 62 veterinarians is called for as against 55 in the original bill.

5. Five years is required in the grade of second lieutenant as against three in the original bill.

6. The passing of a physical examination before promotion, reappointment, or being commissioned, is called for in the recast.

7. Reserve veterinarians in the new bill are not given rank, and pay for only such time as they are in the service of the Government.

8. The method of securing veterinarians to fill vacancies which may occur among the sixty-two veterinarians with rank and commission is made more strict. For the first six months appointees are probationary veterinarians who may be dropped during that period or at its close for unfitness or unsatisfactoriness.

A BILL [H. R. 16843]

To consolidate the veterinary service, United States Army, and to increase its efficiency.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, [That the President is hereby authorized, by and with the advice and consent of the Senate, to appoint veterinarians and assistant veterinarians in the Army, not to exceed two such officers for each regiment of Cavalry and Field Artillery, three as inspectors of horses for the remount depots, one as purchasing officer of veterinary supplies, five as inspectors of meats for the Subsistence Department, three as veterinary examiners and instructors, and one to act as chief veterinarian, not to exceed fifty-five in all.

SEC. 2. That hereafter a candidate for appointment as assistant veterinarian must be a citizen of the United States, between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and that he shall not be appointed until he shall have passed a satisfactory examination as to character, physical condition, general education, and professional qualifications.

SEC. 3. That an assistant veterinarian appointed under section 2 of this Act shall have the rank, pay, and allowances of second lieutenant, mounted; that after three years of service an assistant veterinarian shall be promoted to the rank, pay, and allowances of first lieutenant, mounted: Provided, That he passes a satisfactory examination under such rules as the President may prescribe as to professional qualifications and adaptibility for the mounted service; or found deficient, he shall be discharged from the Army with one year's pay and have no further claim on the Government; that after fifteen years of service an assistant veterinarian shall be promoted to veterinarian with the rank, pay, and allowances of captain, mounted, after having passed such physical and professional examination as the President may prescribe; and that from the veterinarians with the rank of captain one shall be selected to act as chief veterinarian for the period of four years, and while so serving he shall have the rank, pay, and allowances of major.

SEC. 4. That the veterinarians of Cavalry and Field Artillery, together with the veterinarians of the Subsistence Department, now in the Army, who at the date of the approval of this Act, shall have less than three years of service, be reappointed and commissioned as assistant veterinarians with the rank, pay, and allowances of second lieutenant, mounted; that the veterinarians who have over three years of service be reappointed and commissioned as assistant veterinarians with the rank, pay, and allowances of first lieutenant, mounted; Provided, That they pass a prescribed practical pro-

fessional examination and a physical examination as to fitness for mounted field service, or in the case of veterinarians of the Subsistence Department, if their services have been satisfactory to the Commissary General. That the veterinarians with fifteen years of service be reappointed and commissioned as veterinarians with the rank, pay, and allowances of captain, mounted: Provided, That they pass a prescribed practical professional examination and a physical examination as to fitness for mounted field service, and that they shall be entitled to credit for all honorable prior service in the Army as veterinarians or veterinary surgeons in determining their status: Provided further, That veterinarians now in the Army, who fail to pass the prescribed physical examination, due to disability incident to the service, shall be retired with the rank, pay, and allowances corresponding to length of service as prescribed herein.

SEC. 5. That the Secretary of War, upon the recommendation of the chief veterinarian, with the approval of the Quartermaster General, may appoint such number of reserve veterinarians as may be necessary to attend public animals pertaining to the Quartermaster's or other departments and corps, who shall have the pay and allowances of second lieutenant, mounted: Provided, That such reserve veterinarians be graduates of a recognized veterinary college or university, and have previously passed such moral, professional, and physical examination as may be deemed necessary by the Secretary of War for the proper performance of their duties in mounted field service.

SEC. 6. That the Secretary of War is authorized to appoint boards of examiners to conduct the examinations prescribed herein, one member of which shall be a field officer, one a surgeon, and two veterinarians.

SEC. 7. That all laws or parts of laws in conflict with the provisions of this Act be, and are hereby, repealed.]

That the President is hereby authorized, by and with the advice and consent of the Senate, to appoint veterinarians and assistant veterinarians in the Army, not to exceed two such officers for each regiment of Cavalry and Field Artillery, fifteen as inspectors of horses and mules and as veterinarians in the Quartermaster's Department, and five as inspectors of meats for the Subsistence Department, not to exceed sixty-two in all.

Sec. 2. That hereafter a candidate for appointment as assistant veterinarian must be a citizen of the United States between the ages of twenty-one and twenty-seven years, a graduate of a recognized veterinary college or university, and that he shall not be appointed until he shall have passed a satisfactory examination as to character, physical condition, general education, and professional qualifications.

Sec. 3. That an assistant veterinarian appointed under section two of this Act shall have the rank, pay, and allowances of second lieutenant, mounted; that after five years of service an assistant veterinarian shall be promoted to the rank, pay, and allowances of first lieutenant, mounted; Provided, That he passes a satisfactory examination under such rules as the President may prescribe as to professional qualifications and adaptibility for the mounted service; or, if found deficient, he shall be discharged from the Army with one year's pay and have no further claim on the Government.

Sec. 4. That the veterinarians of Cavalry and Field Artillery now in the Army, together with such of the veterinarians of the Quartermaster's and Subsistence Departments provided for in section one of this Act, now employed, who at the date of the approval of this Act shall have less than five years of service, be reappointed and commissioned as assistant veterinarians with the rank, pay, and allowances of second lieutenant, mounted; that the veterinarians who have over five years of service be reappointed and com-

missioned as veterinarians with the rank, pay, and allowances of first lieutenant, mounted: Provided, That they pass a prescribed practical professional examination and a physical examination as to fitness for mounted field service: Provided further, That veterinarians now in the Army, and in the employ of the Quartermaster's Department and the Subsistence Department, who fail to pass the prescribed physical examination, due to disability incident to the service, and who have been incapacitated from rendering satisfactory service to the Government, shall be retired from active service with seventy-five per centum of the pay corresponding to length of service as prescribed herein.

Sec. 5. That the Secretary of War, upon recommendation of the Quartermaster General, may appoint, for such time as their services may be required, such number of reserve veterinarians as may be necessary to attend public animals pertaining to the Quartermaster's or other departments or corps, who shall have the pay and allowances of second lieutenant, mounted, during such period of service and no longer: Provided, That such reserve veterinarians be graduates of a recognized veterinary college or university and have previously passed such moral, professional, and physical examination as may be deemed necessary by the Secretary of War for the proper performance of their duties in mounted field service.

Sec. 6. That candidates passing the examinations as prescribed in section two of this Act shall be appointed, in the order of merit in which they passed such examinations, to vacancies as they occur, such appointment to be a probationary one of six months, after which time, if the services of the probationer have been satisfactory, he shall be permanently appointed, with commission antedated to embrace such probationary service. Probationary veterinarians whose services are found unsatisfactory shall be discharged at any time during the probationary period, or at the end thereof, without further claim against the Government.

Sec. 7. That the Secretary of War is authorized to appoint a board of examiners to conduct the examinations prescribed herein, one member of which shall be a field officer, one a surgeon, and two veterinarians.

Sec. 8. That all laws or parts of laws in conflict with the provisions of this Act be, and are hereby, repealed.

D. A. H.

DR. JAS. A. WAUGH, Pittsburgh, Pa., gave a course of lectures at the Cincinnati Veterinary College, and also a course at the Terre Haute Veterinary College the past winter.

POPULAR EDUCATION.—Through the medium of the Farmer's Institutes, 131,078 persons listened to addresses on agricultural topics during the past season in the State of New York.

NEW YORK STATE MEETING EARLIER.—New York State veterinarians are reminded of the unusually early dates of the New York State Veterinary Medical Society this year. It will be held in Utica July 30-31 and August 1.

CORRESPONDENCE.

To Readers of the AMERICAN VETERINARY REVIEW:

I wish to suggest to readers of the REVIEW, who may have it in mind to do some experimental work with our V. B. Vaccination against hog cholera (see AMERICAN VETERINARY REVIEW for November, 1910, and January, 1912), that you observe especially and record any reliable data concerning the duration of the immunity conferred upon very young pigs.

We would appreciate very much any information concerning your observations on this point.

Future experience may easily show it desirable as a routine procedure to reinforce the original immunity after an, as yet, unknown period. If found advisable, this could be done at a slight cost.

M. H. REYNOLDS,
University Farm, Saint Paul, Minn.

GOWANDA, N. Y., May 6, 1912.

Editors AMERICAN VETERINARY REVIEW, New York:

I noticed in the case reports in the May number a case of irregular parturient paresis in a cow. I had two similar cases in my practice in 1909, the first one being in April, the patient being a six-year-old Jersey due to calve in August. My first call was about 7 a. m., finding the animal with all the symptoms of milk fever, and would have diagnosed it as such but for the history. I gave half a grain strychnine sulphate hypodermically and left a prescription for nux, digitalis and gentian, to be given every two hours. Late that night, there being no improvement, I decided to inflate the udder. At 3 a. m. cow was up eating and apparently as well as ever. There was no recurrence.

To Case No. 2 I was called about 8 a. m., the owner informing me that he thought the cow had a bad sprain or broken limb. Finding no such trouble on examination, I concluded it a parallel of Case No. 1, and inflated the udder, also giving a stimulating treatment as before. This was in June, the cow having calved

in March. The next morning the owner called me up and informed me that the cow was up and all right. As I heard no more from this case, conclude there was no further trouble.

I can think of no reason why it should occur at this time, but know that the treatment for parturient paresis had a curative effect.

J. V. HILLS, D.V.M.

DR. DAVENPORT:

A good aggravated case of indigestion causes exactly the same symptoms as milk fever; *ptomaine* poisoning is *like milk* poisoning, the same treatment will save them; *always wait a reasonable time, and if they fail to get on their feet, chance giving a good dose of salts when down,* and try and maintain life and energy with aromatic spirits and small doses of strichnia, belladonna, and aconite, small doses also. I have had hundreds of such cases.

The trouble with veterinarians is, they are like other animals —lack good judgment. Learning is of no avail without the experience and judgment.

Yours truly,

A ½ HORSE AND COW DOCTOR.

HATTIESBURG, MISS., May 15, 1912.

Editors AMERICAN VETERINARY REVIEW, New York, N. Y.

Since publishing the report we sent you last month in this month's REVIEW of "An Unusual Case of Parturient Paresis," we have received quite an amusing letter from a party in Hempstead, N. Y. I am enclosing same for publication in the REVIEW for the benefit of those who may not be in possession of the "knowledge" of veterinary science and therapeutics which the party discloses in his letter to us.

He states that a good aggravated case of indigestion causes exactly the same symptoms as milk fever or "parturient paresis." We would like to have him state *what form of indigestion* he has reference to? If I am correct, there are several forms of indigestion, which depend largely on the *cause* for the animal's manifestation of *symptoms. Ptomaine poisoning* might cause

sometimes symptoms slightly similar to parturient paresis (or milk fever), but I will confess that I have not met with a case of ptomaine poisoning that would lead me to confuse it with a case of parturient paresis.

As to treatment, you may chance giving a good dose of salts to a cow, down and in an unconscious condition, as much as you like; but you will have to *show me* that you can do so successfully before you can induce me to try such folly.

I quite agree with you, brother, that learning is of little use to a practicing veterinarian without some experience and judgment, and experience and judgment are very liable to lead one astray without the learning. The three requisities go hand in hand. No two of them will bring you success and satisfaction without the others. Perhaps that is why you are a ½ Horse and Cow Doctor.

Yours for the betterment and success of the profession,

EDGAR HEINY, V.M.D.

Veterinary Profession of America via AMERICAN VETERINARY REVIEW:

The following "call to arms" by President Brenton, of the A. V. M. A., has been sent to every member of that organization and is reproduced here, that it may also reach veterinarians who are not members of the A. V. M. A., but who are equally interested with those that are, in the passage of the *Army Veterinary Bill*.

"DEAR DOCTOR:

This is a call to arms! We need the immediate and vigorous help of every last member of the A. V. M. A. in our fight before Congress for proper recognition. What can you do for us? Listen:

Our bill providing for veterinarians in the Army, with the rank and pay of commissioned officers, is now in the hands of the House and Senate Military Committees. The House committee is believed to be willing to report the bill out favorably, and when it does we already have 150 members of the House pledged to vote with us. The Senate committee is less interested, however, and at present the bill is in the hands of a sub-committee of three members, comprising Senator Bristow of Kansas, Senator Jones of Washington and Senator Clark of Arkansas.

Now there are three things which I most earnestly urge you to do if you love your profession and if you want it properly recognized by the United States Government:

1. Write at once a strong letter to either Senator Bristow, Senator Jones or Senator Clark, appealing to him to have his sub-committee report the bill favorably to the Military Committee in order that it can be gotten before the Senate itself.

2. Write also to one or both of the United State Senators from your State and ask them to do what they can to bring the bill out of committee and *to vote for it* when it comes up on the calendar.

3. Write finally to the Congressman from your district and urge him strenuously to support the bill when it is reported out of the committee and put to vote in the House of Representatives.

The chances for success this year are better than they ever were before, but in order to win WE'VE GOT TO WORK. We must wage a relentless battle from now on. Every last man of us in the association must get to work and do his utmost. Can I count on you personally to write these three letters? Please don't delay—write them at once. Now is the time to strike while the iron is hot, and everybody strike together!

Beseeching your assistance, which will lead to the betterment of our beloved profession, I am,

Very heartily yours,

S. BRENTON.

P. S.—For just such reasons as above, we need to constantly increase our membership. Do your best to induce every eligible brother to join us at Indianapolis."

S. B.

DR. CHARLES R. FAIRCHILD MEETS DEATH BY BEING STRUCK BY TRAIN.—Dr. Charles Radcliff Fairchild, D. V. M. (Cornell, 1910), was killed at Batavia, N. Y., where he was practicing, on February 29, 1912. Dr. Fairchild was driving across the tracks of the New York Central Railroad, when his carriage was struck by a train. The doctor was building up a successful practice in Batavia, and was well liked. He was in his 29th year when he met his death.

SOCIETY MEETINGS.

PHILIPPINE VETERINARY MEDICAL ASSOCIATION.

The fourth annual meeting of this association was held at the Young Men's Christian Association building, Manila, commencing at 9.50 a. m. on Friday, February 9, 1912.

The meeting was called to order by the president, Dr. Archibald R. Ward, who stated that as our special guests had other pressing engagements which would not permit their remaining throughout the entire meeting, it was advisable that the association be favored with their addresses first. Thereupon the president introduced Hon. Newton W. Gilbert, Vice-Governor of the Philippine Islands and Secretary of Public Instruction, who expressed his appreciation of the work that is being accomplished by the veterinarians, and of its importance, which is fundamental to the commercial and material development of the Philippines. Judge Gilbert laid particular stress upon the absolute necessity of popularizing the work of the veterinarians in the Archipelago, in order to encourage a certain number of qualified Filipinos to study veterinary medicine; also to encourage increasing cordiality between the veterinarians and the people with whom they come in contact. The secretary made special mention of the acquisition to the veterinary division of Dr. Victor Buencamino, who at his own expense took the initiative by acquiring a veterinary degree, which was very commendable.

In response to Judge Gilbert's excellent address, the Director of Agriculture, Mr. F. W. Taylor, who recently came to the islands, expressed himself as being agreeably surprised at the conditions in general in the islands and the Filipino people in particular, and laid special emphasis upon the importance of cooperation between the veterinarians and the Filipinos, in order to accomplish the desired result of eradicating communicable animal diseases in the Philippine Islands. Mr. Taylor enumerated some of the difficulties that will be encountered in obtaining the necessary appropriations for the Bureau of Agriculture, but assured the veterinarians that he would do all that is possible to assist them in carrying on the campaign, as outlined, against the many diseases that affect the domestic animals of the Archi-

pelago. This was the first opportunity that Mr. Taylor had of appearing before the association, and on account of his optimistic statements he made a very favorable impression on all the members present.

As the minutes of the last meeting were published in the May number of the *Philippine Agricultural Review* and were read by the majority, if not all, of the members, it was decided to dispense with the reading of the minutes and to proceed with the regular order of business.

Dr. George S. Baker, of the Federal service of the United States, who recently came to the islands for the purpose of establishing a meat inspection and quarantine system for the Archipelago, delivered an interesting address on the main features of meat inspection in the States. Dr. Baker spoke in a very optimistic vein regarding the ultimate success in the elimination of animal diseases in the islands.

Dr. H. H. Ladson gave an extemporaneous and detailed report upon the field methods in combating rinderpest in the provinces, in lieu of a paper on the subject. Dr. Ladson's talk resulted in a lively discussion and explanation of many hitherto misunderstood points in the methods that are practiced in dealing with rinderpest in the provinces.

Dr. W. H. Boynton, Pathologist, Bureau of Agriculture, gave an interesting and instructive discourse on an atypical case of rinderpest, illustrating his lecture by means of blackboard diagrams showing in detail the various phases of the disease. This case is probably the first one of its kind ever reported, and the details of it will no doubt be made the subject of a special bulletin.

Dr. D. B. Palmer read an interesting paper on hemorrhagic septicæmia, citing an outbreak that occurred in the municipality of Argao, Cebu province. Dr. Palmer's paper was well received.

A joint paper by Drs. A. R. Ward and F. W. Wood on the transmission of rinderpest was read in a clear and comprehensive manner by the former, and is a very scientific and splendidly written article, based upon observations that were made in an experimental way at the Alabang (Rizal) Stock Farm. The authors intimated that they would publish the article in full in a special bulletin, and anyone interested should obtain a copy and read it in detail, in order to fully appreciate it.

The election of officers took place and resulted as follows: President, Dr. Joseph Jefferes, Veterinarian, Seventh Cavalry,

U. S. Army; Vice-President, Dr. Frank C. Gearhart, Chief of the Division of Animal Husbandry, Bureau of Agriculture; Secretary-Treasurer, Dr. Alvin Broerman, Instructor in Anatomy, College of Veterinary Science, University of the Philippines.

The members of the association present were: Drs. A. R. Ward, Joseph Jefferes, W. P. Hill, A. H. Stancliffe, W. H. Boynton, F. W. Wood, J. L. Gross, Victor Buencamino, G. S. Baker, W. J. Palmer, H. E. Trawver, Chas. H. Decker, A. D. Miller, W. K. Howard, Ray C. Porter, W. A. Kliphardt, C. C. Middleton, D. B. Palmer, James Hill, H. H. Ladson, J. R. Burns, A. H. Julien, Alvin Broerman, T. T. Hartman, and D. C. Kretzer.

It was unanimously decided to give a banquet at the Hotel de Francia at 7.30 o'clock Friday evening, February 9, 1912. There being no further business to come before the association, the meeting adjourned to convene at the call of the president.

The banquet was held as arranged, and was attended by about twenty-five veterinarians and the majority of the technical force of the Bureau of Agriculture. After an enjoyable dinner the following speakers were introduced in a few appropriate and well-chosen words by the toastmaster, Dr. W. P. Hill, Veterinarian, First Field Artillery, U. S. Army.

The first speaker was Mr. F. W. Taylor, Director of Agriculture, who spoke at some length in a more or less humorous vein, but incidentally referred to the benefits that result from bringing together, under the circumstances, of the personnel of the bureau, and intimated that he was in favor of such affairs annually, if not semi-annually, for the mutual exchange of scientific ideas.

The second speaker was Dr. Archibald R. Ward, president of the association, and Chief Veterinarian, Bureau of Agriculture, who stated that a winning fight is being made against rinderpest, and that the number of infected municipalities at the end of the last fiscal year (June 30, 1911, has been reduced from eighty to twenty-eight at the present time, and that now no case of the disease is known to exist in the Archipelago outside the Island of Luzon.

Dr. Ward read a letter, "A Sure Cure for the Grouch," from Dr. P. H. Burnett, one of the members of the association who is on special detail at Pnom-Penh, Cambodia, Indo-China. The author of these lines has "done time" in Indo-China, and can

sympathize with Dr. Burnett, who has probably come to the conclusion that the Philippines are not so bad a place in which to live as some people think.

Dr. George S. Baker, of the Federal service of the United States, was the next speaker. He stated that he has formed more favorable and very different impressions of the Philippine Islands than from what he had been led to believe in the States. Dr. Baker stated that he believed that the key to the successful elimination of communicable animal diseases in the islands lies in more rigid restrictions at the ports of entry. Dr. Baker has come to the Philippine Islands to remain one year, for the purpose of perfecting a meat inspection and quarantine system, and has entered actively into work.

The last speakers were Dr. Joseph Jefferes, Dr. A. H. Stancliffe and Dr. W. P. Hill, in the order given. These gentlemen are military veterinarians, and all made a plea that each and every member of the association give their cause a boost, and our good will and support, to obtain the desired legislation for the Military Veterinary Bill.

After carefully reading a draft of their proposed bill, it certainly appears that the army veterinarians have been very modest, indeed, in their request, and are entitled to all the encouragment and assistance that we as colleagues can give. The army veterinarians have our sympathy, and it is sincerely hoped that they will be successful in securing the legislation which they so ardently desire.

Regrets to attend the banquet were received from his Excellency, W. Cameron Forbes, Governor-General of the Philippine Islands; Major General J. Franklin Bell, U. S. Army, Commanding the Division of the Philippines; Honorable Newtown W. Gilbert, Vice-Governor, and Secretary of Public Instruction; Professor C. M. Conner, Assistant Director of Agriculture; and Mr. H. T. Edwards, Assistant to the Director of Agriculture.

The retiring officers desire to take this opportunity of expressing their appreciation to each and every member of the association for his hearty co-operation, and feel under the deepest obligations to Hon. Newton W. Gilbert, Secretary of Public Instruction, and to Mr. F. W. Taylor, Director of Agriculture, who made the meeting possible, and who contributed so largely to its success.

DAVID C. KRETZER, Secretary-Treasurer.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular monthly meeting of the above association was called to order by President Berns in the lecture room of the New York-American Veterinary College at 8:45 p. m.

The minutes of the April meeting were read and approved.

Dr. C. S. Chase, of Bayshore, L. I., was then introduced, and read an interesting and instructive paper on "Hog Cholera."

In this paper the doctor went quite deeply into details as to cause, treatment and results, having had quite some interesting personal experience with this scourge of swine. Also explained the preparation of the serum which is used to combat this disease.

The doctor stated that he had used the serum, but not always with satisfactory results.

In one herd of twenty-seven head which were inoculated during the early stage of the outbreak, eight recovered. In another herd of seventy-five, in which the injections were made rather late, twelve were saved. He stated to get good results, the serum must be used in the early stage of the disease, and rigid measures taken to prevent the spread of infection.

The final loss to hog raisers in the United States alone in 1908 was $40,000,000. In New York State in 1910 the loss was $66,800.

Dr. Chase also exhibited several beautifully mounted pathological specimens.

Dr. P. K. Nichols, of Staten Island, led in the discussion, and stated that at Sailors Snug Harbor, where a herd of swine are kept, five miles from any other herd, an outbreak occurred, and the only explanation of the source of infection was that it must have come from a railroad passing near the place, which transported hogs and other live stock. It was thought that some of the litter from the hog cars had carried the infection.

Dr. Weaver, of Glen Cove, L. I., stated that the disease is known as true hog cholera, swine plague and contagious pneumonia. The presence of the filtrable virus is the true diagnostic agent. Reported good results where the intestinal symptoms were present, but when the pneumonic symptoms and conditions were present it had little effect.

Dr. Berns asked Dr. Chase as to the means taken to disenfect the hogs and hog pens. The doctor stated that the hogs were dipped in hot creolin solution, thoroughly scrubbed, and

removed to clean new quarters. Freezing destroys the germ of this disease, and when the yards and pens can be exposed to frost, it proves a good method of eradicating the trouble.

Drs. Mangan, Clayton, Cochran and others also discussed this very interesting subject.

Dr. Clayton then placed on exhibition a large skin slough which he explained had followed the use of the preparation known as antiperostin which is used and recommended for the removal of bony growths, but which the doctor claims has removed none for him.

This report led to a general discussion of this class of agents in which a majority of the members took part.

Dr. Clayton in answer to a query, said that he doubted if firing was productive of any beneficial results.

Dr. Weaver asked if any one had used the magnesia sulphate treatment in tetanus, and stated that he had a very bad case recover which was treated in this way. Dr. Berns remarked that one case in which they had used this remedy showed marked improvement, but aften ten days suddenly died.

Dr. Clayton mentioned the use of Chlorotone and sweet oil as a useful agent in tetanus.

Dr. Berns cited a case of a dog having a tumor, in which case Chlorotone was administered in the ratio of three grains to the pound of body weight. After three hours the dog was completely under the influence of the drug and the tumor was removed. The animal continued to sleep for twenty-four hours, but after thirty-six hours got up, staggered around and at the end of forety-eight hours appeared to be normal.

Dr. Mangan asked if so called chloroform pneumonia is a true pneumonia, showing the different stages of regular pneumonia. It seemed to be the concensus of opinion that such is not the case.

Dr. A. Schlesinger reported that a guinea pig inoculated with tubercular material from the dog on which he read a paper at the April meeting, and exhibited specimens of the same, had developed nodules in the groin, and cultures from these are now being grown on egg media.

Dr. Clayton brought up the subject of an easy and cleanly way of administering a cathartic to a cat. It was suggested that the flexible castor oil capsule be used, or still better a chocolate coated preparation of pheno-thalin.

Dr. Ellis cited a case of a dog having swallowed a solid

rubber ball, retaining the same for quite a period of time, and finally after the doctor had about exhausted his resources, was evacuated, but instead of being spherical was somewhat crescent shaped. The doctor also mentioned an interesting case of tape worm in a dog, in which case the owner, a deaf mute lady, was the diagnostician. The worm was successfully removed in its entirety in two hours.

A discussion of trocar abscesses was then taken part in by a number of the members and visitors present. It was the consensus of opinion that the infection causing the abscess is due to faecal matter lodging in the tissues as the instrument is withdrawn. It was suggested that a 3 per cent. carbolic solution be injected through the canula into the bowel before removing the same. Creolin solution is also used, for the same purpose, with good results.

Dr. Berns extended an invitation to the association to hold the June meeting in the Berns Veterinary Hospital in Brooklyn.

On motion regularly made, seconded and unanimously carried, it was decided to accept Dr. Berns' invitation, and hold the June meeting in Brooklyn. It is expected that several operations will be performed, and Dr. D. J. Mangan will read a paper on an interesting subject.

Meeting adjourned.

R. S. MacKellar,
Secretary.

WISCONSIN STATE VETERINARY SOCIETY.

The above society met at the Republican House in Milwaukee on February 20 and 21. Though the meeting was not a large one in the point of the number of veterinarians assembled, it was one of the most enthusisatic and interesting meetings of its kind. The general session in the convention room of the Republican House was presided over by Dr. J. S. Atkinson, vice-president, in the absence of President Dr. H. P. Clute. Dr. M. P. Ravenel delivered the first address. His theme was the work of the Anti-Tuberculosis Association and its relation to the veterinary profession. He urged more active co-operation of the practicing veterinarians with this association and outlined the efforts to check the ravages of the "Great White Plague" in America. This address was one of the most helpful of the session and won for the doctor and for the cause he represented many new friends.

Other speakers were: Durant C. Gile, Milwaukee, on "Bovine Tuberculosis in Wisconsin"; Dr. O. H. Eliason, State Veterinarian, Dr. J. T. Hermshein, Pleasant Prairie, "Interstate Shipment of Cattle"; Dr. A. H. Hartwig, Watertown. "Power of the University—How it Affects the Farmer, the Veterinarian and the Public"; Dr. Charles Schmitt, "Equine Intestinal Parasites." Wednesday morning clinics were held at the Milwaukee Veterinary Hospital; several very interesting operations were performed. Tuesday evening the banquet was held at the Republican House, where the veterinarians, after regaling themselves upon the tasty viands set before them, entered upon an informal discussion of matters pertaining to the veterinary profession. Dr. Hermshein was master of the ceremonies, and those who know the genial doctor may be assured that the ceremonies were carried out in a manner to suit the occasion to the dot. It was not until after midnight that the banqueters left the hall, firmly resolved to be present at the next meeting of the society, which was scheduled for August at Watertown.

The following resolutions were unanimously passed at the regular session:

"Whereas, The United States Live Stock Sanitary Association at its Chicago meeting December 5 and 6, last, adopted the following resolution, Resolved, That this association place itself on record as discountenancing the action of any State Board which shall employ or empower any one to apply this (tuberculin) test officially who is not a thoroughly competent and qualified veterinarian, and

"Whereas, This resolution must apply to the Wisconsin Live Stock Sanitary Board, as Wisconsin is the only state where such practice is adopted, and

"Whereas, Under this loose method of testing cattle 22.52 per cent. of error resulted in the useless slaughter of thousands of dollars' worth of healthy cattle from July 1, 1910, to July 1, 1911, and

"Whereas, The administration from July 1, 1911, to November 1, 1911, discontinued allowing other than qualified veterinarians to apply the test, thereby reducing the error to 2.7 per cent., in spite of which the State Live Stock Sanitary Board on December 2, 1911, reverted to the erroneous tests by the laity, Therefore, be it

"Resolved, By the Wisconsin State Veterinary Society, in

convention assembled in Milwaukee this 20th day of February, 1912, that we, the representatives of the veterinary profession of Wisconsin, disapprove of the action of the Wisconsin Live Stock Sanitary Board, and pledge our allegiance to the United States Live Stock Sanitary Association in its efforts to check the increase of tuberculosis, and further pledge our support of any measure looking to the adoption of practices in Wisconsin which shall harmonize with the views of the United States Live Stock Sanitary Association."

The following officers were elected: President, Dr. H. P. Clute, Milwaukee; vice-president, Dr. J. S. Atkinson, Marinette; secretary, Dr. W. W. Arzberger, Watertown; treasurer, Dr. J. Hermshein, Pleasant Prairie; trustee, Charles Schmitt, Dodgeville.

W. W. ARZBERGER,
Secretary.

ADVANTAGES OF HYPODERMIC ANESTHESIA.

Lanphear, in the International Journal of Surgery, enumerates these as follows:

ABSENCE OF NAUSEA.—After operation there is absence of nausea and vomiting—a most important thing, especially in abdominal surgery.

ABOLITION OF PAIN.—Post-operative pain is conspicuous by its absence. Patients often pass a most comfortable night instead of suffering intensely and sometimes sleep much of the first twenty-four hours succeeding operation, awakening next morning with a demand for food.

EARLY FEEDING.—The desire for food may usually be gratified (except, of course, in operation on the stomach and other special work where peristalsis is objectionable), as the secretions are not checked enough to interfere with digestion. This is of great import, particularly when the patient has become weakened before operation and when there has been unusual loss of blood.

PREVENTION OF SHOCK.—When this form of anesthesia is used, shock is absent unless there is excessive hemorrhage or unless too much ether or chloroform is used. Much of what has been called "shock" in the past was the result of an excessive amount of chloroform and, in less degree, ether.

FREEDOM FROM FEAR.—A most prominent advantage of this form of anesthesia is the absence of fear or dread of the operation room.

NO ANESTHETIST ESSENTIAL.—A most decided advantage of this form of anesthesia, and especially of true hyoscine-morphine-cactin (H-M-C, Abbott), supplemented by a local anesthetic (Abbott's Anesthaine preferred) when needed, is that a surgeon may perform many operations without the assistance of another doctor. The importance of this in country practice can hardly be overestimated. Curettage of the uterus, repair of cervix, repair of perineum, forceps delivery, operation for strangulated hernia, for appendicitis, reduction of fractures, etc., may be done with this agent, plus a local anesthetic.

ECONOMY.—To hospitals, and to many doctors, the cost of ether or even of chloroform is something of more than passing interest. In hospitals, where many operations are performed, the use of even one tablet an hour or so before the patient is taken to the operation room will reduce the anesthetic bill of the institution one-half or more.

LESSENING LABOR.—To the nurse this form of anesthesia is a God-send. The relief is not only physical, but mental; no anxiety about post-operative pain, vomiting, restlessness, fear and thirst of the patient—all this means much to the conscientious hospital nurse; and the patient who has had both forms of anesthesia can never again be induced to submit to chloroform or ether.

NO INTERFERENCE WITH PERISTALSIS.—There is but little, if any, interference with bowel movement. An enema in twenty-four hours usually suffices and even that may not be necessary, for not infrequently there is natural evacuation within the first day, unaided.

LONG ANESTHESIA.—The analgesia continues for many hours. This is of distinct advantage in prolonged, tedious operations. To know that the patient is not being carried to the brink of the grave by too much chloroform or ether is an immeasurable comfort to the operator who has to use a long time in his work.

NEWS AND ITEMS.

MEAT INSPECTION INVESTIGATION.

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry at Washington, who is at the head of the Government meat inspection service, states that the Bureau has nothing to fear from a fair and thorough investigation of the inspection.

"The resolution introduced in Congress by Representative Nelson," says Dr. Melvin, "contains a number of false assumptions based on ignorance or misrepresentation of the facts. It appears that the charges are inspired by professional agitators, aided by disgruntled and discredited ex-employees who have been dismissed from the service. Most of these charges were made two and a half years ago by Mrs. Caroline Bartlett Crane before the American Public Health Association, and she was unable to sustain them to the satisfaction of the executive committee of that association. The charges are also partly based on statements made by Dr. Albert Leffingwell in a book on 'American Meat,' published by him in England in 1910, a book abounding in misrepresentations and distorted quotations from official publications.

"Aside from the attack on the integrity of the officials administering the service, the main question at issue is simply whether the inspection should be based on principles determined by eminent scientists the world over who have thoroughly studied the subject, or on the sentimental notions of faddists. In 1907 the regulations were carefully gone over by a commission of distinguished scientific experts outside of the Department of Agriculture, who reported that 'if there be any general error in the regulation this is in favor of the public rather than in favor of the butchers and packers.' The present regulations conform to the views of that commission except that they are even more strict in some respects than the commission thought necessary.

"Perhaps the most striking evidence that the meat inspection has not deteriorated is the fact that percentage of condem-

nations under the new law have been more than fifty per cent. greater than under the old law. It is evident from the statements so far made by Mrs. Crane before the committee that she does not understand many things about the inspection system and the regulations, and anything that she does not understand she suspects of being crooked. She has gone out of her way to place a sinister construction upon perfectly innocent things. So far she has advanced nothing that cannot be made perfectly plain by the Bureau when the time comes to present its side of the case.

"The so-called secret instructions to Bureau employees were issued as a confidential publication only during 1907 and 1908. For three and a half years these announcements have been furnished not only to the packers but to State officials, stockmen and the press. The object of issuing confidential instructions during the period that these announcements were regarded as confidential was not to nullify the law and regulations in the interests of the packers, but rather to keep the packers from knowing of the steps that were being taken to maintain surveillance over their operations.

MEAT INSPECTION AND TUBERCULOSIS.

The Government meat inspection service has been criticised for passing for food purposes the meat of animals that are slightly affected with localized tuberculosis. It is sometimes charged that diseased meat is passed for food.

"The only foundation for such statements," says Dr. Melvin, Chief of the Bureau of Animal Industry, "is that the healthy and wholesome meat of an animal affected slightly and locally with some disease is passed, after the affected portion has been removed and condemned. The meat or flesh may not be affected in any particular, the disease being usually confined to certain glands or organs. The diseased portion is condemned; only the healthy portion is passed for food.

"This procedure is justified and sustained by the highest scientific authorities not only in the United States but in all countries having an efficient meat inspection. Objections to it usually come from those who have not made a study of comparative pathology and who are not qualified to pass upon the questions involved, and sometimes they come from those who op-

pose the use of meat at all as food and who wish to discredit it in every possible way."

Dr. Melvin continues:

"The idea of eating the meat of a slightly diseased animal may be repulsive to some, but a little consideration should readily convince a reasonable person that there is no valid reason for condemning and wasting perfectly wholesome meat simply because there happens to be somewhere in the animal a gland or an organ showing a lesion, or a parasitic nodule, or some slight, local condition which does not extend to or affect in any way the remainder of the carcass. The argument that all the meat of an animal affected to even the slightest degree with any disease should be totally and utterly condemned, if carried to the extreme and to its logical end, would result in the condemnation of practically every animal slaughtered and the abolition of meat as food.

"With the increasing cost of the necessaries of life it becomes more important that wholesome food should not be recklessly and needlessly destroyed, and it is the duty of this Department not only to protect the people against unwholesome meat, but to conserve the food supply. The only sensible course in meat inspection is to determine at just what stage a disease or abnormal condition becomes noxious, and where to draw the line between what should be condemned and what should be passed, always giving to the consumer the benefit of any doubt."

As showing that the Department does properly safeguard the consumer, Dr. Melvin refers to the report of a commission of eminent scientists outside the Department of Agriculture who were appointed in 1907 to consider and make recommendations with regard to certain features of the meat inspection, and who said on this point:

"The commission would invite attention to a very widespread misconception as to the significance of the word 'diseased' in connection with meat inspection. To the popular mind the idea of eating 'diseased' animals is abhorrent. From the standpoint of meat inspection, however, the term 'diseased' must be used in a sense not entirely in harmony with the popular conception of this word.

"The commission could easily undertake to show that not any single animal used for food in any part of the world would, upon microscopic study, be shown to be absolutely free from all infection or lesion if said animal were presented to it for ex-

amination. * * * There may be a strictly localized tuberculosis, consisting, for instance, of an isolated tuberculous nodule in the lungs, in the liver, or in some other portion of the body. Such nodule would make the particular point infected 'diseased' from the standpoint of meat inspection; in the opinion of some members of the laity, such nodule would also make the entire meat of the animal 'diseased' and call for the condemnation of the entire carcass; from the standpoint of meat inspection, the carcass in general would not be 'diseased,' and there would be no justification in condemning it.

"The veterinary inspector, in judging whether a carcass is 'diseased,' must do so upon the general principles of pathology in its relation to the public health, and not upon any preconceived, exaggerated or sentimental idea.

"The commission would suggest that the co-operation of the public is most valuable in aiding in the suppression of frauds in the meat trade, but that it would be well for the public to have confidence in the ability of the veterinary inspectors to pass judgment upon the purely technical side of the questions involved, since such judgment can be of value only when expressed by persons especially trained for this purpose.

"Illustrative of the precautions taken by the Department of Agriculture to safeguard the public health, it is the opinion of the commission that the Bureau of Animal Industry, acting under the existing regulations, would necessarily condemn certain meats which would be allowed, either with or without restrictions, according to circumstances, upon the markets of Germany, France, England, and other countries."

Dr. Melvin states that under the Federal inspection it is only when the disease is slight and localized or circumscribed that the unaffected portions of the carcass are passed for food. Whenever the disease is generalized or disseminated throughout the system, or is of such character or extent as to affect the wholesomeness of the meat, the entire carcass is condemned—and the consumer is given the benefit of every doubt. Careful experiments carried out by the Bureau and by scientists elsewhere have shown that the germs of tuberculosis are not carried in the blood circulation and distributed throughout the system until the disease has reached a very advanced stage. It is, therefore, considered perfectly safe, when the infection is clearly limited to a certain gland or group of glands or an organ, to remove these parts and pass the healthy parts which have not become affected in any way by the disease.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange. N. J
American V. M. Ass'n.....	Week Aug. 26,'12	Indianapolis..	C. J. Marshall, Philadelphia
Arkansas Veterinary Ass'n.....	.....	.....	J. B. Arthur, Russellville.
Ass'n Médécale Veterinare Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha ..	3d Mon. ea. mo.	S. Omaha, Neb	E. J. Jackson, So. Omaha.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n....	June and Nov...	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.....	June, 1912	Ft. Collins....	B. F. Kaupp, Ft. Collins.
Connecticut V. M. Ass'n.....	Feb. 6, 1912.....	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan. Apl. Jy. Oct.	Wilmington ..	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. ea. mo.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21-22, 1911.	Atlanta.....	P. F. Bahnsen, Americus.
V. M. A. of Geo. Wash. Un'y.....	2d Sat. ea. mo..	Wash., D. C..	A. T. Ayers.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Idaho Ass'n of Vet. Graduates....	Oct. 10-12, 1911..	Boise.....	G. E. Noble, Boise.
Illinois State V. M. Ass'n.....	July, 1912... ...	Springfield ...	L. A. Merillat, Chicago.
Indiana Veterinary Association...	Jan. 15-16, 1913..	Indianapolis ..	A. F. Nelson, Lebanon.
Iowa Veterinary Ass'n.....	.....	.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n...	January, 1913...	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. ea. yr.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	.....	.....	E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	July, 1912.....	Portland.....	C. W. Watson, Brunswick.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. ea. mo.	Young's Bost'n	J. H. Seale, Salem.
Michigan State V. M. Ass'n.....	Feb. 6-8, 1912...	Mich. Agr. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n....	July 10-11, 1912.	Minneapolis...	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	Wm. P. Ferguson, Grenada.
Missouri Valley V. Ass'n.....	.....	.....	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n	.....	.....	D. L. Luckey,
Montana State V. M. A.....	Jan. 29-30, 1912.	Bozeman	A. D. Knowles, Livingston.
Nebraska V. M. Ass'n.....	January, 1912....	Lincoln.....	W. H. Tuck, Weeping Water.
New York S. V. M. Soc'y.....	Jy. 30-31, Aug. 1.	Utica.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 1912	Raleigh.....	M. J. Ragland, Salisbury.
North Dakota V. M. Ass'n.....	Fair Week, 1912.	Fargo.....	C. H. Babcock, New Rockford.
North-Western Ohio V. M. A.....	Feb. and Nov...	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....	.....	.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Dec. 14-15, 1911.	Okla. City....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	April, 1912.....	Toronto	C. H. Sweetapple, Toronto.
Pennsylvania State V. M. A.....	September, 1912.	.....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Sam. B. Foster, Portland, Ore
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence
South Carolina Ass'n of Veter'ns	.....	.....	Clarence E. Smith, Greenville
So. Illinois V. M. and Surg. A....	Jan. 2-3, 1912...	Centralia	F. Hockman, Louisville.
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	June 19, 1912....	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia..	B. T. Woodward, Wash'n, D. C
South Dakota V. M. A.....	2d Tues. July '12	Aberdeen.	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	J. A. Dell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Mar. 18 19, 1912..	Fort Worth...	R. P. Marsteller, College Sta
Twin City V. M. Ass'n.....	2d Thu. ea. mo .	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Mar., 1912	Logan	A. J. Webb, Layton.
Vermont Vet. Med. Ass'n	.....	....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	M. Page Smith, Wash., D. C
Vet. Ass'n of Manitoba.....	Midsummer Fair	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	July, 1912.....	Jersey City...	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club....	Monthly.....	Jersey City ...	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n	July 11, 1912....	Newport News	Geo. F. Saville, Norfolk.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	R. J. Donohue, Pullman.
Washington State V. M. A.....	Jan. 9-10, 1913...	Wenatchee....	Carl Cozier, Bellingham
Western Penn. V. M. Ass'n.....	3d Thurs. ea. mo.	Pittsburgh....	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad	July, 1912.....	Janesville.....	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	June 4, 1912.....	York.....	E. S. Bausticker, York, Pa.

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